CHAPTER 55

LIST OF EFFECTIVE TEMPORARY REVISIONS

FOLLOWING IS A COMPLETE LISTING OF ALL ACTIVE TEMPORARY REVISIONS (TR'S). TR'S NOT LISTED SHOULD BE REMOVED. THE ATA NUMBER, CONFIG CODE AND PAGE NUMBER IDENTIFIES THE PAGE PRECEDING THE TR.

TR NUMBER	ATA NUMBER	CONFIG CODE	PAGE NUMBER	TR DATE

NONE

CHAPTER 55

STABILIZERS

LIST OF EFFECTIVE PAGES

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CHAPTER 55

STABILIZERS

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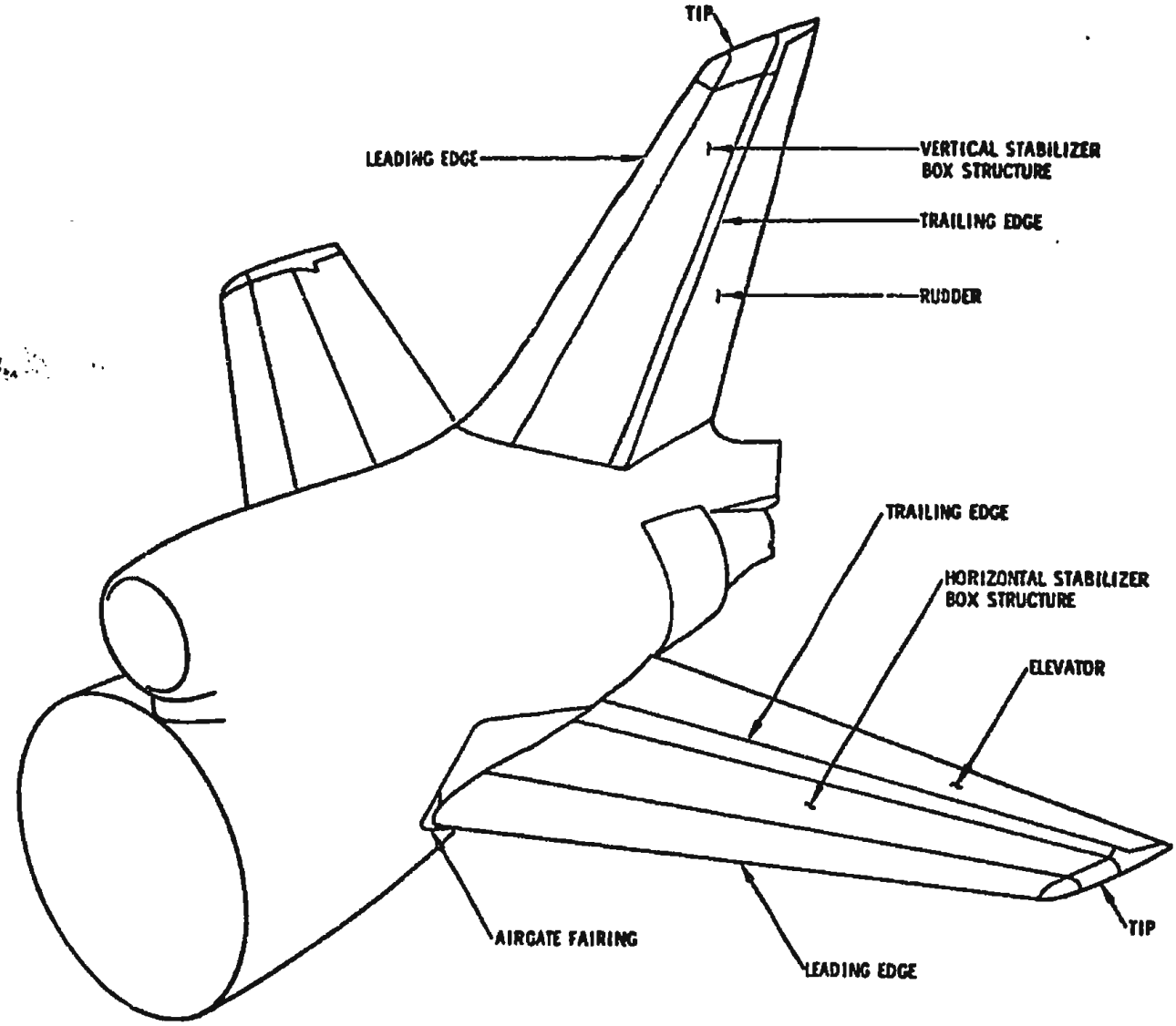
STABILIZERS - DESCRIPTION AND OPERATION

1. General

The stabilizers (Ref. Fig. 1) consist of the horizontal stabilizer, elevators, vertical stabilizer, and rudder. The vertical stabilizer includes front and rear spars, extruded section truss type, and press-formed aluminum ribs, stringer-reinforced cover panels, and leading and trailing edges.

The vertical stabilizer fairs into the center engine air inlet duct fairing at the forward end and into the center engine support structure fairing at the lower aft end. A one-piece rudder assembly is hinged to the vertical stabilizer rear spar.

The horizontal stabilizer is of similar construction, except that a truss-type auxiliary spar is located forward of the front spar. The auxiliary spar serves as a support for the removable leading edges. An elevator is hinged to the rear spar of each of the outboard horizontal stabilizer sections.



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Stabilizers
Figure 1

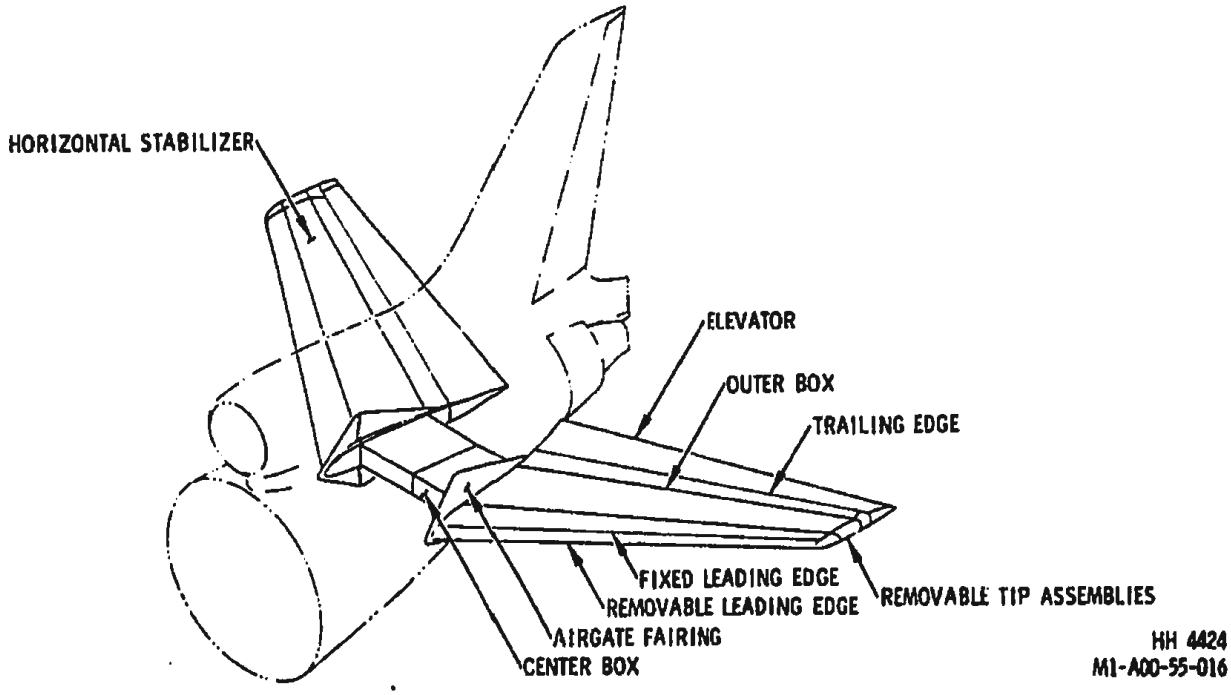
HORIZONTAL STABILIZER - DESCRIPTION AND OPERATION

1. General

The horizontal stabilizer (Ref. Fig. 1) consists of a center box beam, two outer stabilizer panels, and two elevator control surfaces. The outer stabilizer panels and the center box beam are splice-joined with high-strength, close-fit, permanent-type fasteners into a one-piece structural assembly.

The stabilizer extends through the fuselage afterbody at approximately waterline (WL) 227.0, forward of the center engine. The stabilizer is attached to the fuselage frame by pivot-hinge fittings on the aft spar of the center box beam. Fittings on the center box forward spar support the horizontal stabilizer control actuators.

An airgate fairing structure fastened at the inboard side of each outer stabilizer panel seals the opening in the fuselage afterbody structure. The opening permits up and down movement of the horizontal stabilizer box beam.



Horizontal Stabilizer
Figure 1

MAIN FRAME - DESCRIPTION AND OPERATION

1. General

The horizontal stabilizer main frame consists of the center section box beam (Ref. Fig. 1) and outer section box beam structures (Ref. Fig. 2). Each box structure consists of front and rear spars, ribs, integrally stiffened skin panels, fittings, and fasteners.

The center section box structure has a span of approximately 12.5 feet at the rear spar and 15 feet at the front spar, and is approximately 8 feet wide.

R Each outer section box structure extends approximately 32 feet from root rib to tip. The stabilizer box width varies from approximately 96 inches at the root rib to 37 inches at the tip closure rib. The outer box depth varies from approximately 27.5 inches at the root rib to 10 inches at the tip closure rib.

2. Spars

A. Description

The center box structure and outer box structure front and rear spars are made of conventionally stiffened web construction with spar caps machined from 7075-T6 aluminum alloy extrusions, and shot-peened to resist stress corrosion.

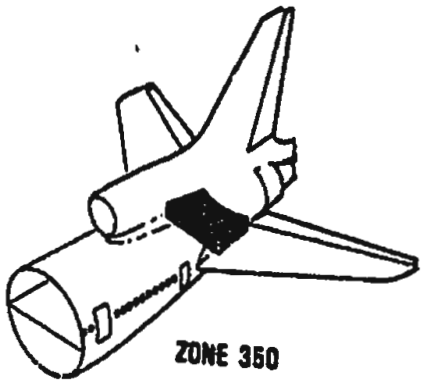
Web panels vary in thickness. The stabilizer outer panel rear spar is strengthened at the outer ends to reinforce six inspection holes.

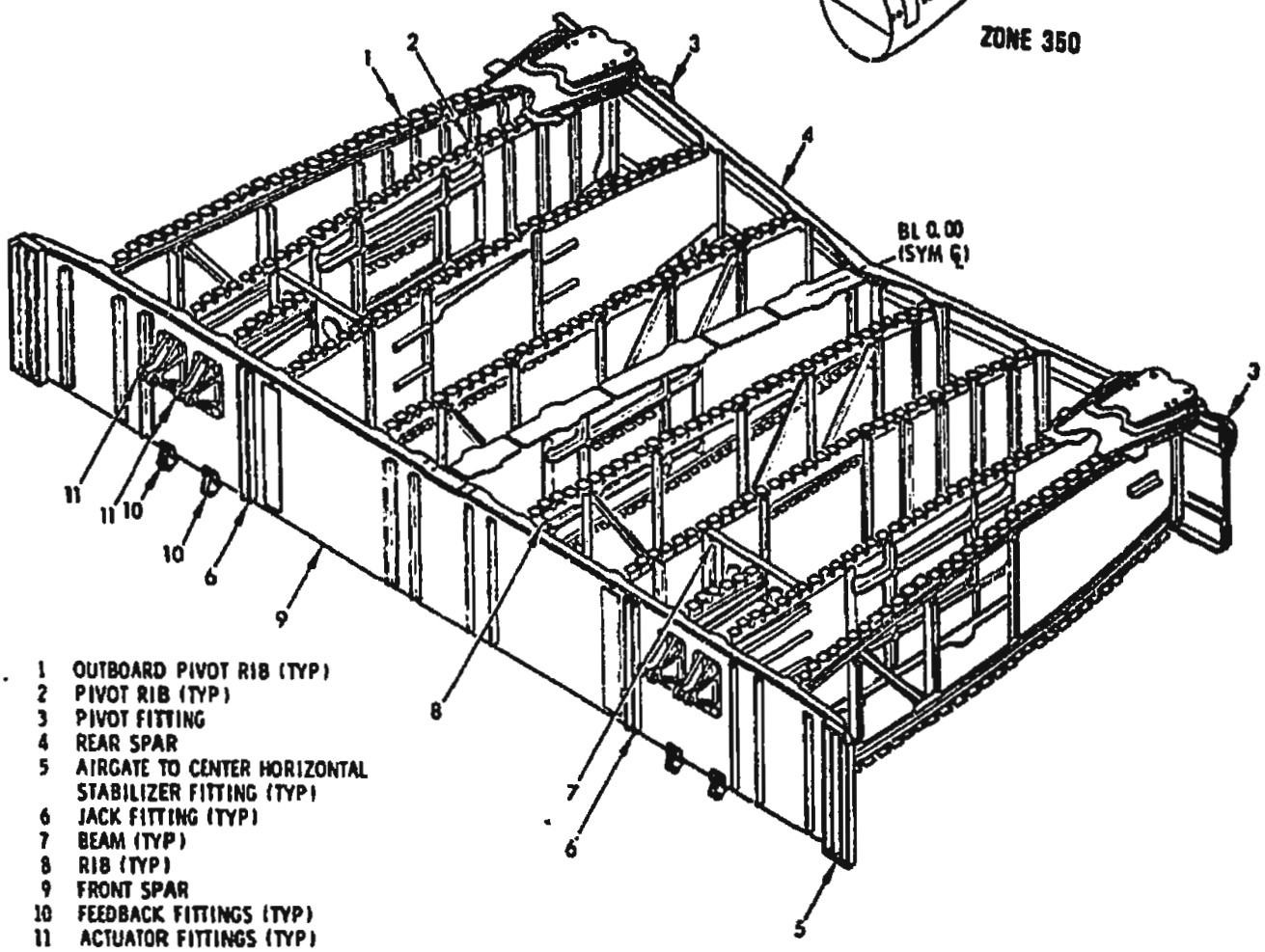
3. Ribs

A. Description

The stabilizer center box beam has nine full ribs and two short actuator backup ribs.

The center main rib has a double-skin, shear-resistant web with extruded T- and Z-section stiffeners. A 12 by 18 inch access hole in the web is framed by a two-piece machined 7075-T6 aluminum fitting. The fore and aft webs are chem-mill tapered and shot-peened.





1 OUTBOARD PIVOT RIB (TYP)
2 PIVOT RIB (TYP)
3 PIVOT FITTING
4 REAR SPAR
5 AIRGATE TO CENTER HORIZONTAL STABILIZER FITTING (TYP)
6 JACK FITTING (TYP)
7 BEAM (TYP)
8 RIB (TYP)
9 FRONT SPAR
10 FEEDBACK FITTINGS (TYP)
11 ACTUATOR FITTINGS (TYP)

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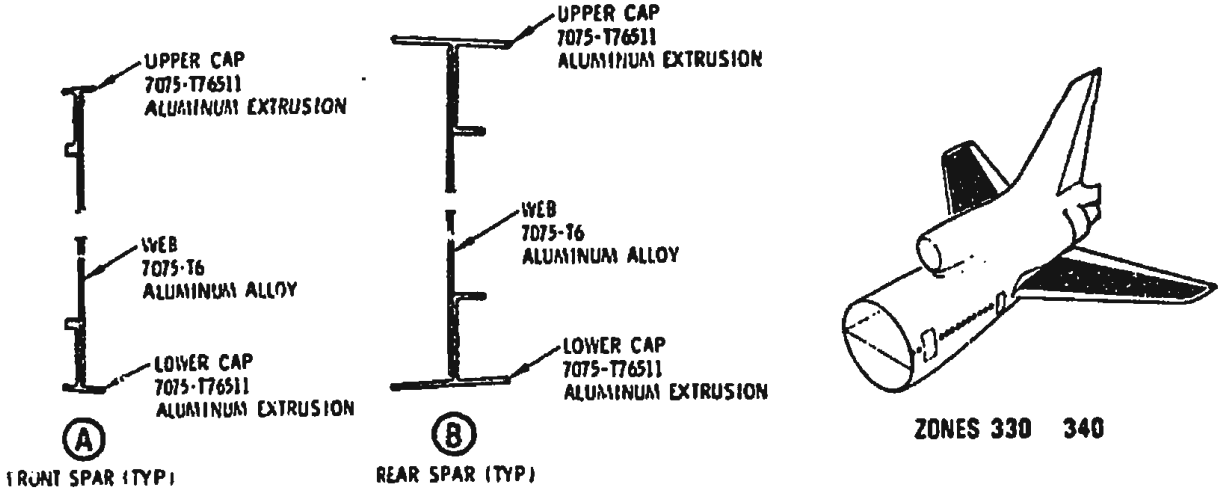
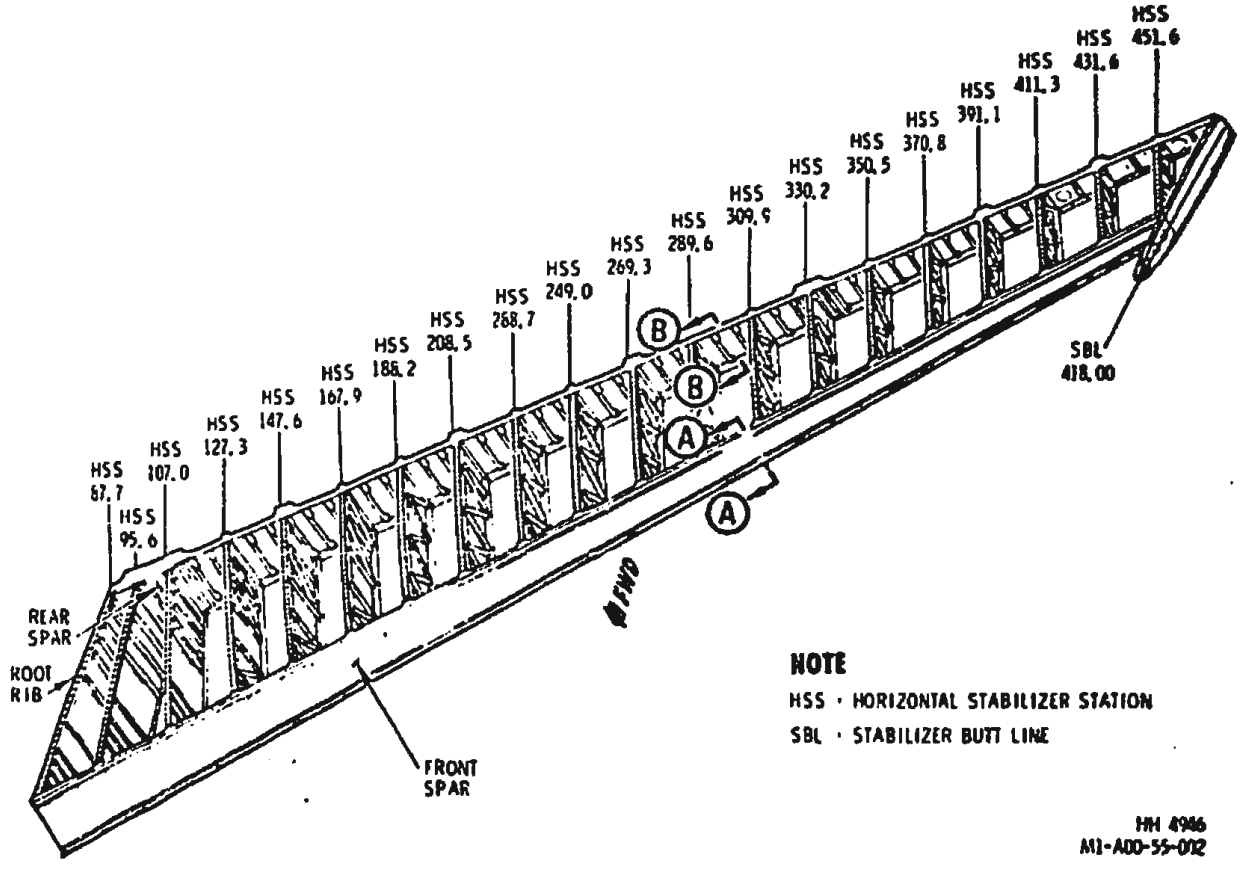
R
R Horizontal Stabilizer Center Box Structure
Figure 1

EFFECTIVITY: ALL





NOTE

HSS - HORIZONTAL STABILIZER STATION

SBL - STABILIZER BUTT LINE

HM 4946
M1-A00-55-012

R Horizontal Stabilizer Outer Box Structure
R Figure 2

EFFECTIVITY: ALL

Truss-type ribs at buttock line (BL) 16 and 37 provide access. Truss members are made from cruciform-shaped aluminum extrusions.

The ribs backing up the horizontal stabilizer pivot fittings have shear-resistant webs. The web, web stiffeners, 12 by 18 inch access hole frames, and rib cap materials are similar to the center main rib. Each pivot rib backs up one side of the pivot fitting clevis. Each inboard pivot rib, at the forward end, provides backup structure for the outboard stabilizer actuator attach fittings. A shear web stub rib backs up the inboard actuator attach fittings at the front spar.

Each outer box structure has 20 ribs: 17 truss-type box ribs and 3 web-type ribs, one of which is a closure rib.

The root rib and the next 4 outboard ribs have rectangular openings of approximately 12 by 18 inches. These access provisions permit entry into the horizontal stabilizer box through the most inboard access hole in the lower surface, and passage inboard through the center box structure to an exit point on the opposite side. All ribs have extruded aluminum caps and X-section truss members.

LEADING EDGE STRUCTURE - DESCRIPTION AND OPERATION

1. General

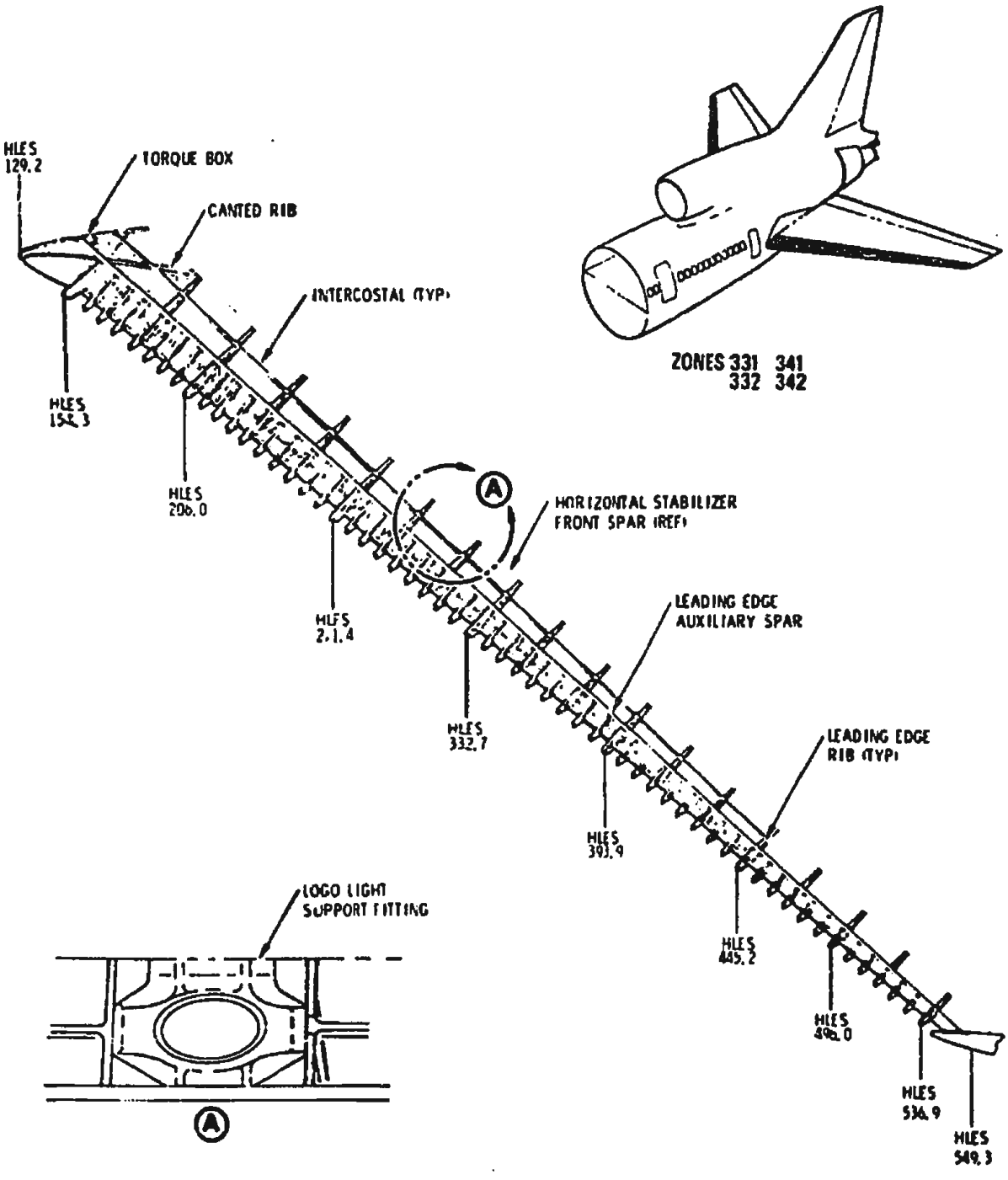
Each leading edge assembly consists of a fixed box structure (Ref. Fig. 1), and removable nose panel assemblies.

An auxiliary spar at the stabilizer 10-percent chord line defines the forward face of the fixed box structure and supports the removable nose panels. The auxiliary spar is of extruded cap and truss construction and is supported on its aft face by chordwise intercostals and ribs.

There are two types of ribs: pressed sheet aluminum, and truss ribs of extruded aluminum alloy.

The nose panels are removable to permit access into the fixed leading edge structure. Pressed aluminum alloy formers shape and stiffen the nose panels. The leading edge panels vary in length from approximately 60 to 70 inches.

A logo light support is mounted below the upper surface of the horizontal stabilizer leading edge fixed box structure between horizontal leading edge station 291.9 and 312.3.



NOTE

HLES - HORIZONTAL LEADING EDGE STATION

HH 5764
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R Horizontal Stabilizer Leading Edge Structure
R Figure 1

EFFECTIVITY: ALL

001B

HORIZONTAL STABILIZER LEADING EDGE PANELS REMOVAL AND INSTALLATION

1. Equipment and Materials

Workstand

Flat bed dolly and padding, as required

Drill motor, reversible, air or electrical

Antichafing Compound, LAC Spec LCM40-1218, Type II, or equivalent

Mold Release Compound, Specialty Products Co., Resin Release N, or equivalent

Talc, Purified U.S.P. Grade, 200 Mesh, or equivalent

Sealing Compound, LAC Spec LCM40-2121, or equivalent

Sealing Compound, LAC Spec LCM40-1279, or equivalent

Solvent, Trichloroethane, Fed Spec O-T-634, or equivalent

2. Referenced Procedure

LCP78-1080 Antichafing Protection of Structure Contacting Doors and Fillets

3. Removal/Installation

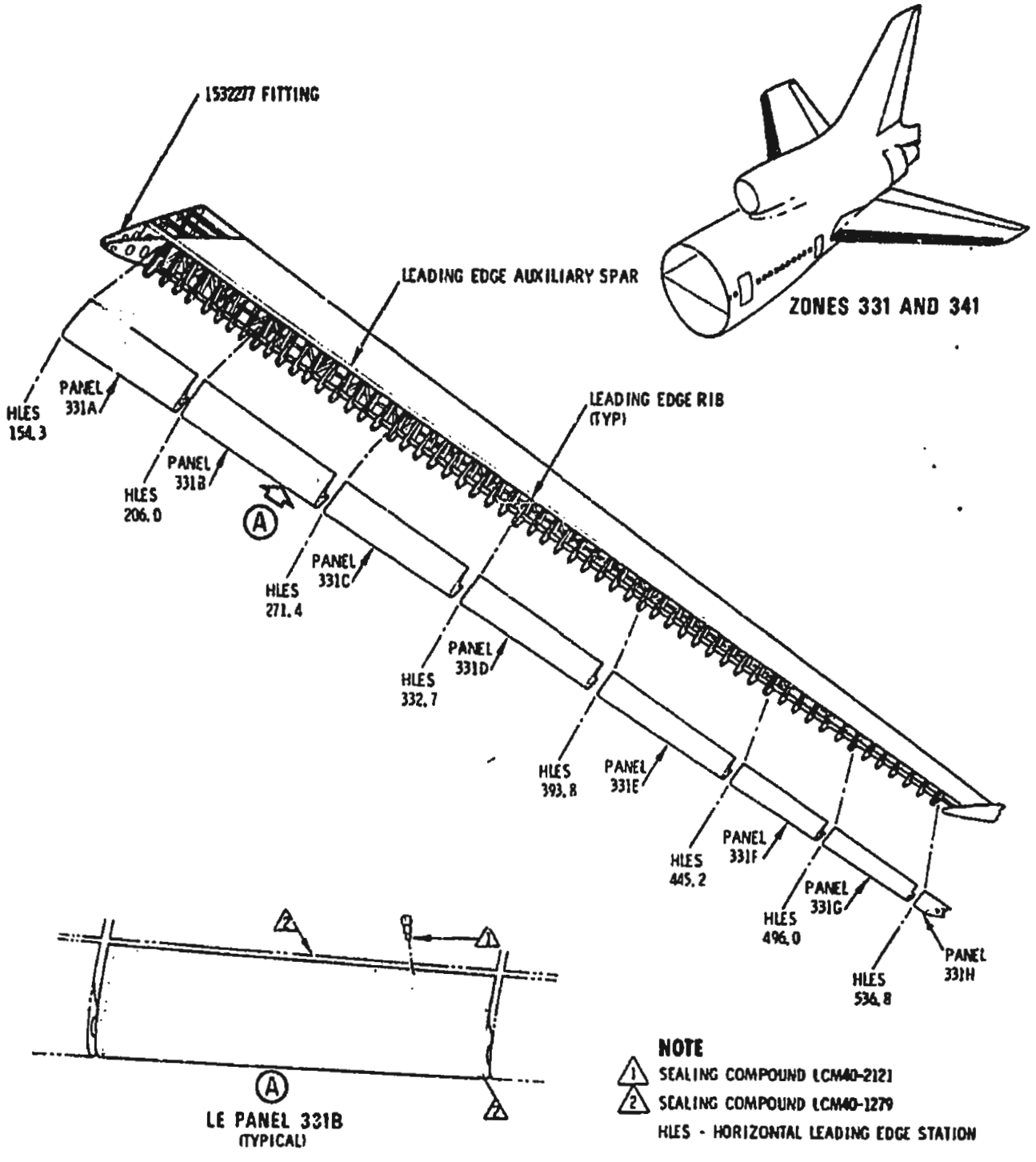
A. Removal

CAUTION: DO NOT SCRATCH ADJACENT STRUCTURE OR SKIN SURFACES. PROTECT EXPOSED INTERNAL EQUIPMENT AND STRUCTURE WITH SUITABLE COVER.

NOTE: Each leading edge panel is independent of its adjacent panel and can be removed or installed in any sequence.

(1) Place workstand under horizontal stabilizer leading edge panels.

(2) Remove screws attaching selected leading edge panel with drill motor equipped with triwing screwdriver attachment (Ref. Fig. 401). Leave two screws in each end of panel nose area until last.



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R Horizontal Stabilizer Leading Edge Panels - Removal and Installation
R Figure 401

(3) Support panel from below as last two screws at each end are removed.

(4) Place removed panel on padded dolly, or equivalent.

B. Installation

CAUTION: DO NOT SCRATCH ADJACENT STRUCTURE OR SKIN SURFACES.

(1) Place workstand under horizontal stabilizer leading edge panels.

(2) Examine faying surfaces of leading edge ribs and auxiliary spar. Repair as necessary in accordance with Structural Repair Manual instructions.

(3) Check all attachment nutplates and screws. Replace as required. Check nutplates for security.

(4) To protect panel skins from chafing, check condition of antichafing compound on the contact surfaces of the leading edge ribs and auxiliary spar. Repair, if necessary, to thickness of 0.010 to 0.020-inch in accordance with LCP78-1080.

(5) Apply talc and mold release compound (Ref. LCP78-1080).

(6) Hold panel in position and temporarily install two screws at each end of nose panel area.

(7) When panel is aligned and seated, apply LCM40-2121 sealing compound, or equivalent, to outer surface of each screw hole.

(8) Install remaining screws.

(9) Remove temporarily installed screws. Apply LCM40-2121 sealing compound, or equivalent, to exposed holes and reinstall screws.

(10) Torque all screws to 25 (±5) lb in.

C. Sealing

(1) Seal horizontal stabilizer leading edge panels as follows:

(a) Tape both sides of the gap between the panel trailing edge and the skin above the outer box structure leading edge.

(b) Tape both sides of the gaps between the panel inboard and outboard edges and the edges of the adjacent panels.

(2) Fill all gaps with LCM40-1279 sealing compound, or equivalent.

(3) Remove all tape after sealing compound has cured.

NOTE: Standard cure time for LCM40-1279 sealing compound is 24 hours at 75 (±10) degrees F.

(4) Remove workstand and tools. Stow as required.

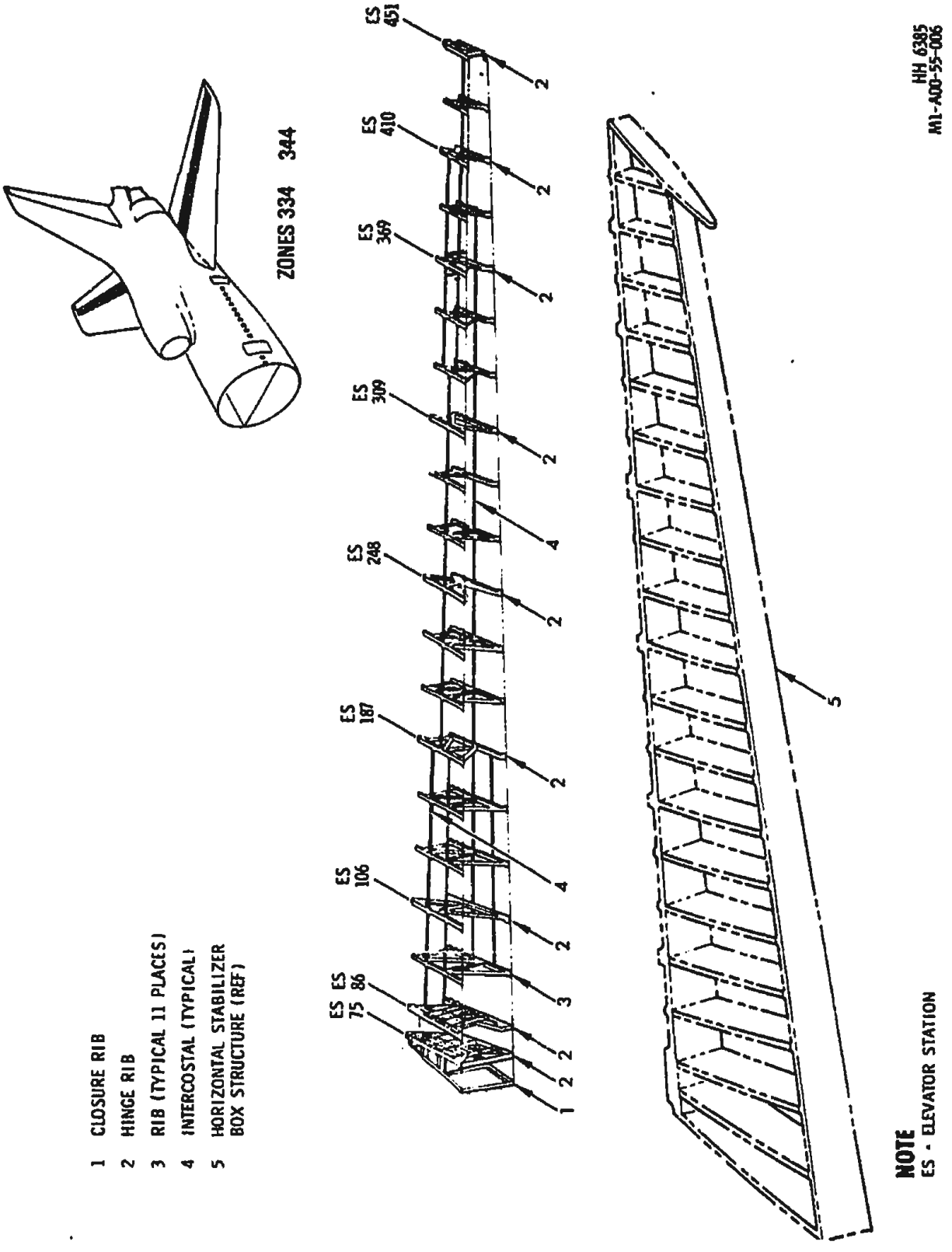
TRAILING EDGE STRUCTURE - DESCRIPTION AND OPERATION

1. General

The horizontal stabilizer trailing edge structure (Ref. Fig. 1) extends aft of the outer box rear spar at the 59.50-percent chord line. This structure includes ribs, intercostals, upper and lower fixed covers and hinged access doors.

The trailing edge structure comprises the following ribs: 11 truss intermediate ribs, 4 hinge ribs, 2 elevator drive and hinge ribs, 3 elevator damper support and hinge ribs, and one end closure rib.

All hinge ribs are machined from 7075-T73 aluminum forgings. The two innermost hinge ribs have the additional function of supporting the elevator control linkage and are of heavier construction than the other hinge ribs.



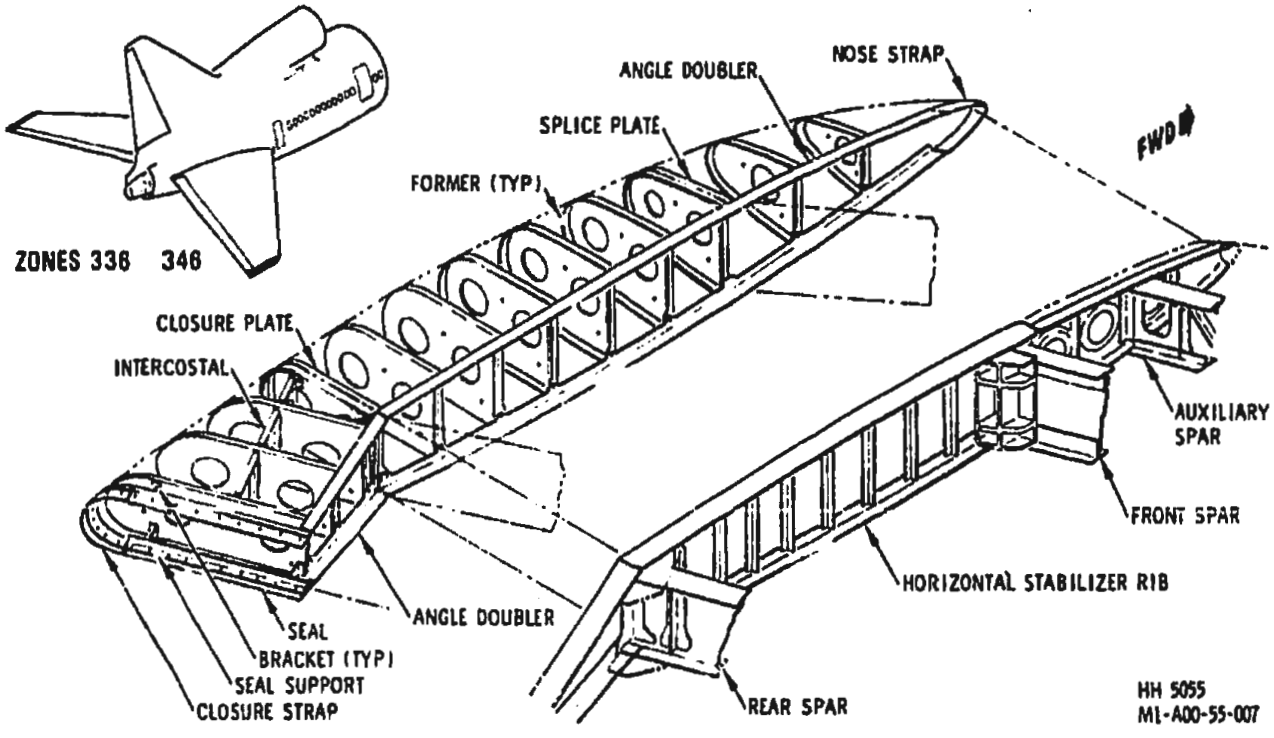
Trailing Edge Structure
Figure 1

TIP STRUCTURE - DESCRIPTION AND OPERATION

1. General

The horizontal stabilizer tip structure consists of two removable assemblies (Ref. Fig. 1). The forward unit closes the outer box structure, and the aft unit closes the trailing edge structure.

The tip assemblies are made of press-formed 7075-T6 sheet aluminum alloy formers, angles, and straps. Aluminum alloy 6061-T6 sheet is used to cover the forward end of the forward tip and 2024-T3 aluminum alloy sheet is used to cover the remaining tip, structure.



Horizontal Stabilizer Tip Structure
Figure 1

HORIZONTAL STABILIZER TIP PANELS - REMOVAL AND INSTALLATION

1. Equipment and Materials

Workstand

Flat bed dolly and padding, as required

Drill motor, reversible, air or electrical

Sealing compound, LAC Spec LCM40-2121, or equivalent

Sealing Compound, LAC Spec LCM40-1279, or equivalent

Solvent, Trichloroethane, Fed Spec O-T-634, or equivalent

2. Removal/Installation

A. Removal

CAUTION: DO NOT SCRATCH ADJACENT STRUCTURE OR SKIN SURFACES. PROTECT EXPOSED INTERNAL EQUIPMENT AND STRUCTURE WITH SUITABLE COVER.

NOTE: Remove the aft tip panel first and install it last if the removal or installation of either or both tip panels is required.

(1) Locate workstand under horizontal stabilizer tip panel.

(2) Remove screws attaching upper and lower seals to aft tip panel with drill motor equipped with triwing screwdriver attachment (Ref. Fig. 401).

(3) Remove each attachment bolt securing aft tip panel. Support panel from below as last bolts are removed.

(4) Pull panel away slowly and disconnect jumper.

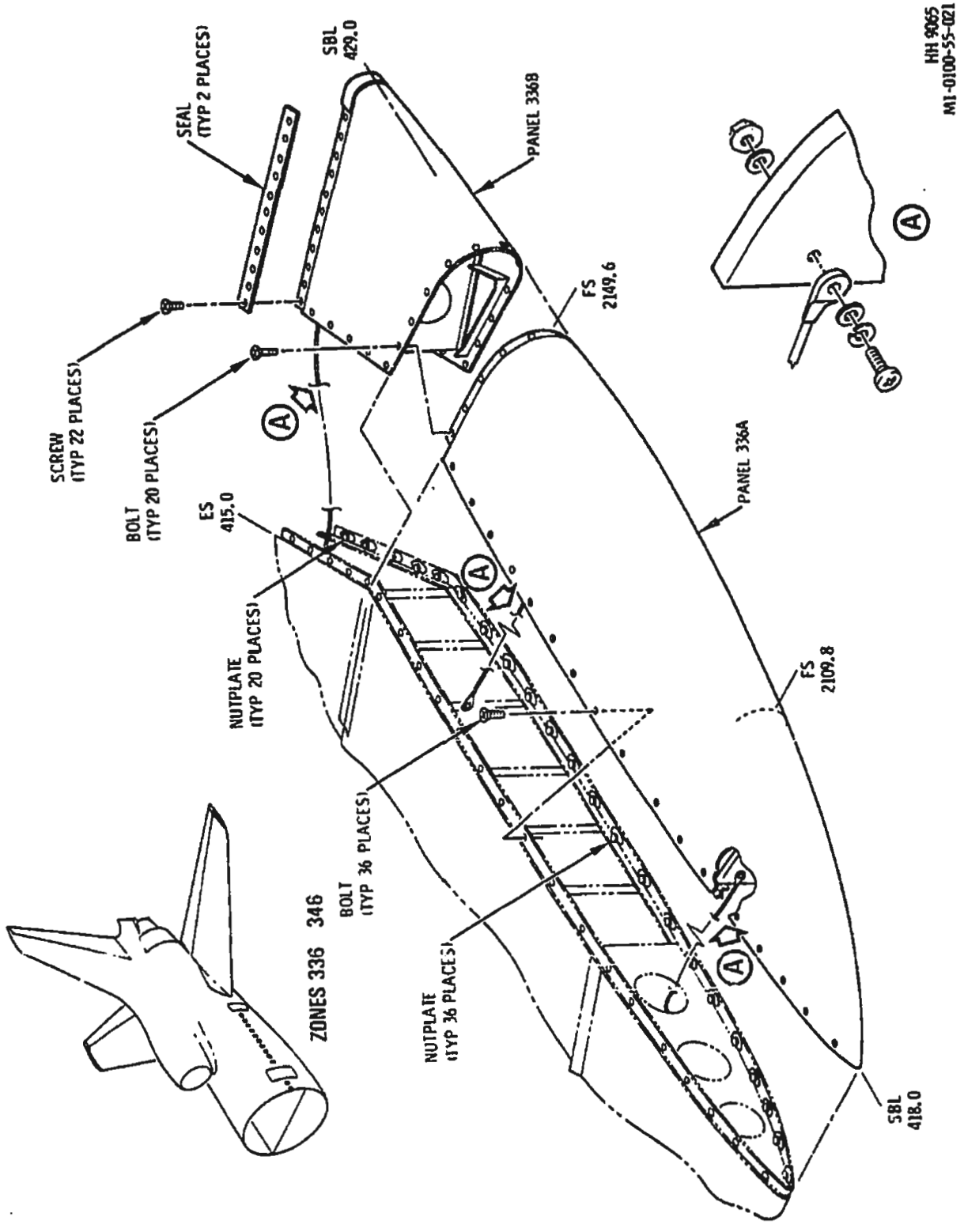
(5) Place aft tip panel on padded dolly, or equivalent.

(6) Remove bolts attaching forward tip panel, leaving corner bolts until last.

(7) Support panel from below and remove corner bolts.

(8) Pull panel away slowly and disconnect both jumpers.

(9) Place forward tip panel on padded dolly, or equivalent.



Horizontal Stabilizer Tip Panels
Figure 401

B. Installation

CAUTION: DO NOT SCRATCH ADJACENT STRUCTURE OR SKIN SURFACES.

NOTE: Install forward tip panel first and aft tip panel last, if both panels have been removed.

(1) Locate workstand under horizontal stabilizer tip panels.

(2) Remove protective cover over horizontal stabilizer exposed area, if used.

(3) Examine faying surfaces of outer box and trailing edge structures. Repair as necessary in accordance with Structural Repair Manual instructions.

(4) Check all attachment nutplates, screws, and bolts. Replace as required. Check nutplates for security.

(5) Use bonding brush to clean foward tip panel contact surfaces, and the self-locking nuts, washers, and screws which attach both jumpers.

(6) Hold forward tip panel near outer box structure, then connect both jumpers.

(7) Install a bolt temporarily near each panel edge (top and bottom).

(8) When panel is aligned and seated, apply LCM40-2121 sealing compound, or equivalent, to outer surface of each bolt hole.

(9) Install remaining bolts.

(10) Remove temporarily installed bolts. Apply LCM40-2121 sealing compound, or equivalent, to exposed holes and reinstall bolts.

(11) Torque all bolts to 25 (±5) lb in.

(12) Use bonding brush to clean aft tip panel contact surfaces, and the self-locking nut, washers, and screws which attach the jumper.

(13) Hold aft tip panel near trailing edge structure, then connect jumper.

(14) Install a bolt temporarily near panel forward and aft edges (top and bottom).

(15) When panel is aligned and seated, apply LCM40-2121 sealing compound, or equivalent to outer surface of each bolt hole.

(16) Install remaining bolts.

(17) Remove temporarily installed bolts. Apply LCM40-2121 sealing compound, or equivalent, to exposed holes and reinstall bolts.

(18) Install screws attaching the upper and lower seals to the aft tip panel rear edge.

(19) Torque all bolts to 25 (±5) lb in.

C. Sealing

(1) Seal horizontal stabilizer forward and aft tip panels as follows:

(a) Tape both sides of the gap between the forward tip panel inboard edge and the outer box structure outboard edge.

(b) Tape both sides of the gap between the aft tip panel inboard edge and the trailing edge structure outboard edge.

(c) Tape both sides of the gap between the aft tip panel trailing edge and the seal forward edge.

(d) Tape both sides of the gap between the forward tip panel aft edge and the aft tip panel forward edge.

(2) Fill all gaps with LCM40-1279 sealing compound, or equivalent.

(3) Remove all tape after sealing compound has cured.

NOTE: Standard cure time for LCM40-1279 sealing compound is 24 hours at 75 (±10) degrees F.

Remove excess sealing compound with a cloth dampened with solvent.

(4) Remove workstand and tools. Stow as required.

PLATES AND SKINS - DESCRIPTION AND OPERATION

1. General

The removable leading edge skin panels are constructed of 7075-T6 aluminum alloy sheet clad on the outer surface. The skins are chem-milled contoured on the inner surface to reduce weight. Skin thickness is greater along the panel outer edges for attachment loads and on the panel leading edge areas to resist hail damage.

The upper and lower surface fixed leading edge cover panels are beaded inner skins structurally bonded to the outer skins. The 2024-T42 clad aluminum alloy inner bead doublers are chordwise-oriented hat sections closed at each end.

The upper and lower skins of the stabilizer center box are integrally stiffened panels machined from 7075-T76511 aluminum alloy extrusions. The panels are machine-tapered with blade risers spaced approximately 2.5 inches apart. The blade height and thickness varies to meet structural load requirements.

All skin panels are shot-peened after forming. The upper skin panels are spliced at BL 0.0.

Lower surface panels are continuous for the full span of the center box structure. All surface panels are joined by extruded aluminum T-sections in a spanwise butt splice.

The outer box structure skins are of the same basic configuration as the center box skins. The upper and lower surfaces each include five separate spliced panels. The blade risers on all skin panels, except the forward one, run parallel to the rear spar. The narrow forward panels over the front spars have risers that parallel the front spar. Six access holes approximately 11-1/2 by 16 inches are located on the lower surface of each outer stabilizer. A removable closeout panel is located outboard of horizontal stabilizer station (HSS) 412. Inspection holes are provided on the rear spar.

Six clamp-on type doors close access holes on the lower surface of each outer stabilizer. The doors, which are held in place with clamp rings and screws, are made of 2024 aluminum alloy sheet with internal Z-stiffeners.

Laminated fiber glass trailing edge outer skin covers have internal chordwise bead-type stiffeners. Upper and lower surface covers are permanently attached with rivets to the rear spar, ribs, and intercostals.

Nineteen hinged access doors are provided on the lower surface of the trailing edge. Each door is hinged along its forward edge and attached to structure with captive screws. The beaded, glass-fiber laminate doors provide easy access for structure and control component inspection and maintenance.

HORIZONTAL STABILIZER LOWER TRAILING EDGE DOORS REMOVAL AND INSTALLATION

1. General

This procedure applies to all the hinged doors on the horizontal stabilizer lower trailing edge which provide access to elevator bearings and counterbalance weights. Though the procedure applies to all doors, the number of door and hinge fasteners may vary.

2. Referenced Procedures

R 20-51-04 Environmental Sealing

29-11-00 Hydraulic Power System - Maintenance Practices

3. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

A. Removal

(1) Open door(s), as required, by removing screws on door inboard and outboard edges (Ref. Fig. 401).

(2) On aircraft without SB55-014, remove door(s) by removing bolts attaching door hinge to structure.

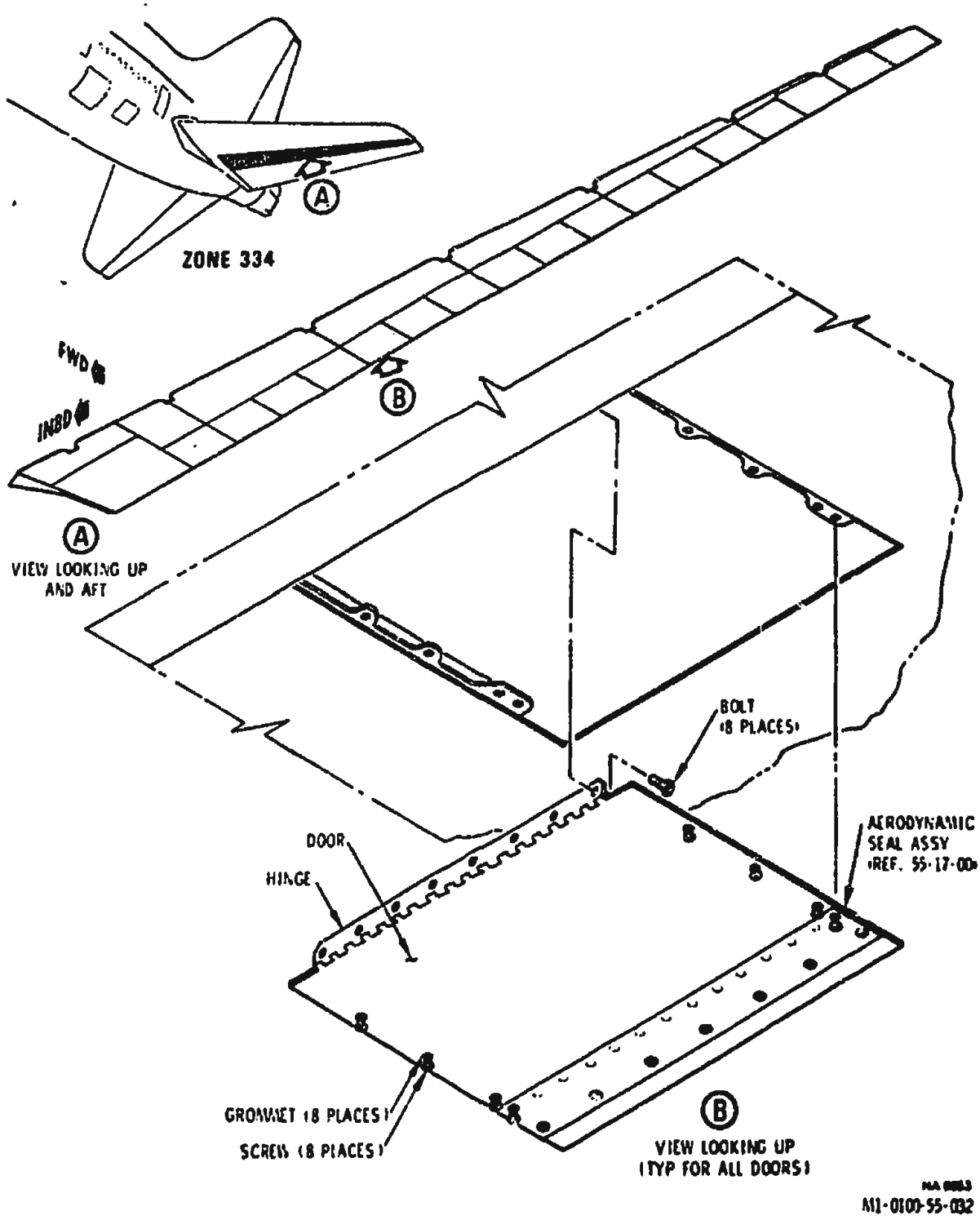
(2) On aircraft with SB55-014, remove door(s) (ES86 to ES390) by removing hinge attachment bolts, retainer and seal. For doors (ES390-ES451), remove hinge bolts.

B. Installation

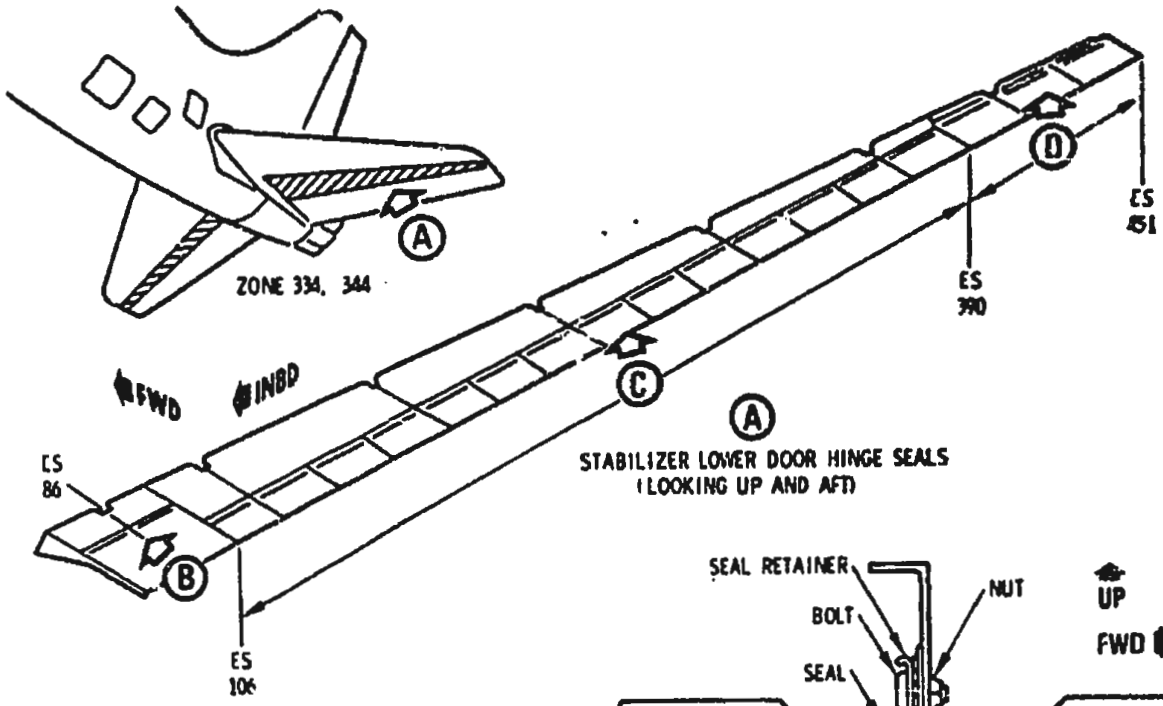
NOTE: For instructions on removing sealant, cleaning and wet-installation of fasteners, refer to 20-51-04.

(1) On aircraft without SB55-014, remove sealant from hinge and attachment bolts. Clean as required.

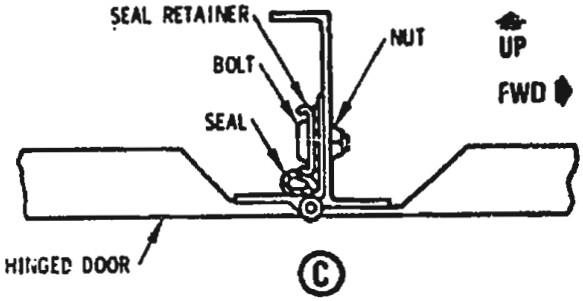
(1) On aircraft with SB55-014, remove sealant from hinge, attachment bolts and



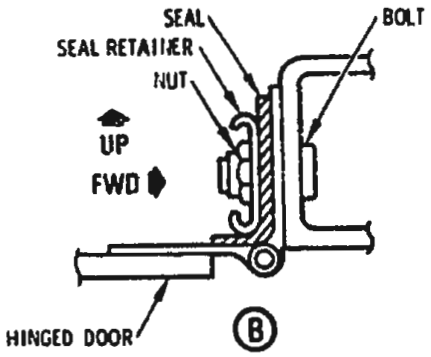
Horizontal Stabilizer Lower Trailing Edge Doors
Removal and Installation
Figure 401



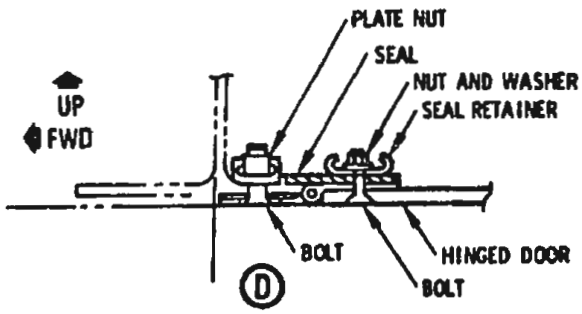
A
STABILIZER LOWER DOOR HINGE SEALS
(LOOKING UP AND AFT)



C
TYPICAL FOR ES106 TO ES390
(LOOKING OUTBOARD)



B
TYPICAL FOR ES 86 DOOR INBOARD
AND OUTBOARD HINGES
(LOOKING OUTBOARD)



D
TYPICAL FOR ES390 TO ES451
(LOOKING INBOARD)

NOTE
ES - ELEVATOR STATION

MI-0000-55-037

Horizontal Stalilizer Lower Trailing Edge Doors
Removal and Installation
Figure 401

R R 001B EFFECTIVITY: 001-024, 027 WITH SB55-014 AND 025, 026, 028-999

retainer. Clean as required. Check condition of seal and replace as required.

(2) Wet-install bolts attaching door hinge to structure.

(3) Secure door(s) by installing screws on inboard and outboard edges.

(4) Remove warning tags installed at beginning of Paragraph 3.

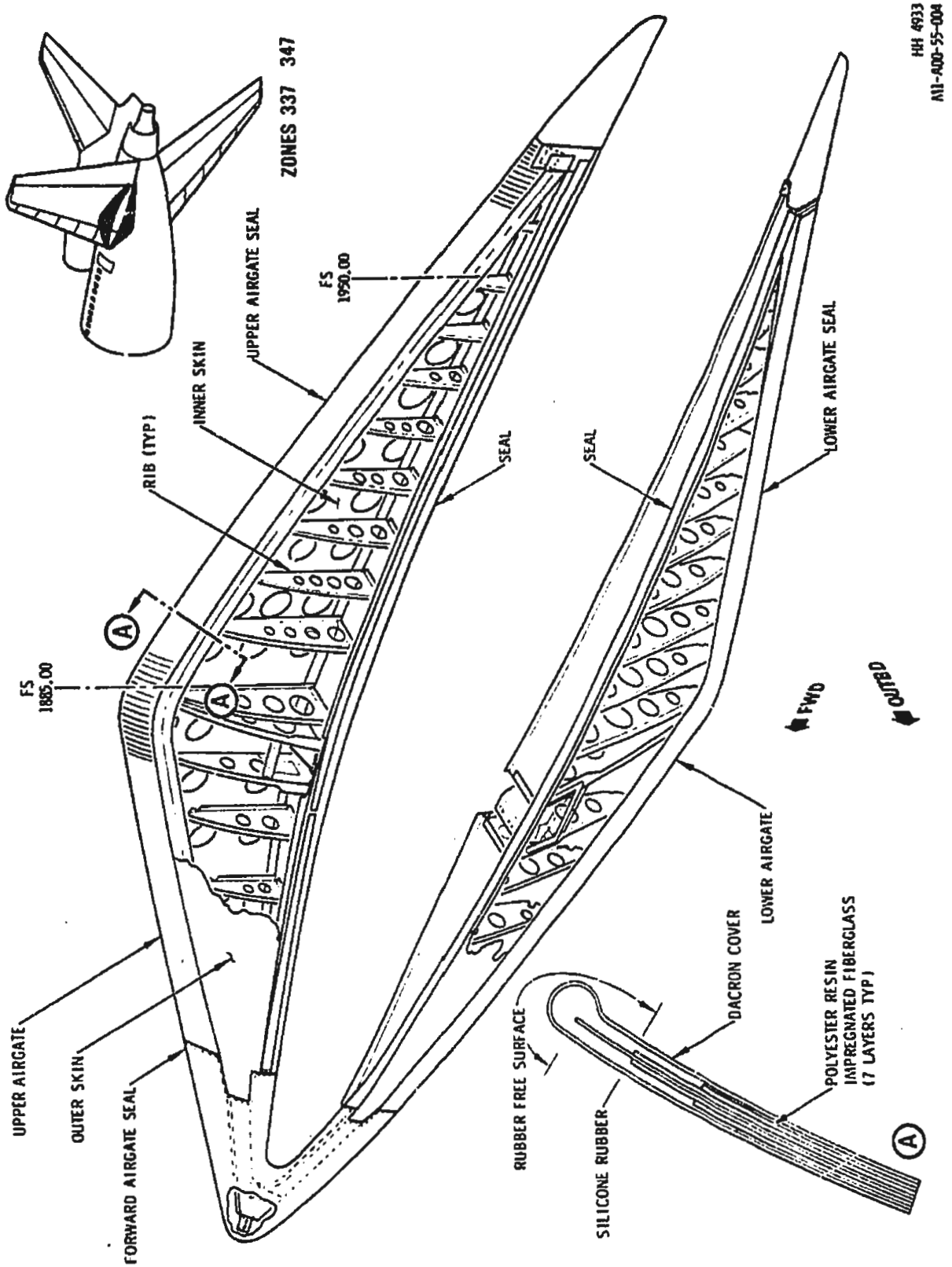
AIRGATE FAIRING - DESCRIPTION AND OPERATION

1. General

The airgate fairings (Ref. Fig. 1) are attached to the inboard ends of the horizontal stabilizer. These fairings seal the fuselage opening required for horizontal stabilizer operation.

The airgate fairing installation includes upper, lower, and forward members interconnected and fastened to the horizontal stabilizer at the leading edge, front, and rear spars. The airgate may be removed for structural inspection of the stabilizer-to-fuselage interface areas. The airgate fairing is a contoured box structure consisting of ribs, webs, caps, angles, and outer skins made of 7075-T6 aluminum alloy. The inner skin and doublers are constructed of 2024-T3 aluminum alloy.

A preformed seal is attached to the outer periphery of the airgate structure. The seal, which is approximately 3 inches wide, is made up of a Dacron cover with a silicone rubber coating. The seal is internally reinforced with an insert of nine layers of fiber glass impregnated with polyester resin. A simple bulb-type seal of Dacron-covered silicone rubber is used on the inner airgate structure where it interfaces with the stabilizer skin.



Airgate Fairing
Figure 1

AIRGATE FAIRING - REMOVAL AND INSTALLATION

1. General

R R This procedure applies to both the left and right airgate fairings. The procedure is identical except for access door identities (Ref. 6-40-00). The airgate fairing assembly is attached to the horizontal stabilizer at three points on both the top and bottom surfaces, and at one point at the leading edge (Ref. Fig. 401).

2. Equipment and Materials

Sealing Compound, PR1301BT-K (Products Research Co.), or equivalent

Sealing Compound, PR8501-K (Products Research Co.), or equivalent

Cleaner, Methyl-Ethyl-Ketone, TT-M-261, or equivalent

3. Referenced Procedures

6-40-00	Exterior Access Doors and Panels, Zone 300, Afterbody
20-51-04	Environmental Sealing
29-11-00	Hydraulic Power System - Maintenance Practices
51-80-00	Aerodynamic Smoothness (Structural Repair Manual)

4. Removal/Installation

NOTE: All attachment bolts, screws, washers, serrated plates, fillers, shims, etc., removed at each attachment location, should be properly identified and retained for reinstallation at the same location and position.

R R R R On aircraft 001-031 without SB55-016, each bolt (at all fittings) has a countersunk washer next to the bolt head, followed by a plain washer (Ref. Fig. 401).

R R R On aircraft 001-031 with SB55-016 and 032-999, each bolt (at all fittings) has a two-piece, self-aligning type washer, a filler and a longer bolt

R (Ref. Fig. 401). The filler conforms to the shape of the
R fitting and has a slot which allows for bolt adjustment
R (Ref. Fig. 401).

A. Removal

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00) AND HORIZONTAL STABILIZER IS BETWEEN THE ZERO AND TWO DEGREES NOSE DOWN POSITION. TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

(1) On aircraft 001-014 without SB55-006, Forward Airgate Fairing.

(a) Remove forward airgate seal by removing all attachment screws and washers, except two bolts located immediately aft of leading edge of fairing, FS1813 (Ref. Fig. 401).

(b) Remove seal assembly by sliding forward until fitting, located at FS1813, clears support frame.

(c) Remove two bolts, washers and nuts which attach fitting to seal.

NOTE: If the seal is satisfactory for reinstallation, it is not necessary to remove the fitting.

If the upper and lower airgate fairings are to be removed, the forward fairing support frame must be removed. To remove the support frame, proceed with the following steps.

(d) Remove two attachment bolts at horizontal stabilizer leading edge fitting.

(e) Remove two screws which attach each leg of support frame to upper and lower airgate fairing forward attachment fittings.

(f) Remove support frame.

(1) On aircraft 001-014 with SB55-006 and 015-999, Forward Airgate Fairing,

(a) Remove 14 screws which attach metal plate and seal to support frame.

(b) Remove remaining screws and washers attaching forward airgate seal to support frame.

(c) Remove forward airgate seal.

NOTE: If the upper and lower airgate fairings are to be removed, the forward fairing support frame must be removed. To remove the support frame proceed with the following steps.

(d) Remove two attachment bolts at horizontal stabilizer leading edge fitting.

(e) Remove two screws which attach each leg of support frame to upper and lower airgate fairing forward attachment fitting.

(f) Remove support frame.

(2) Lower Airgate Fairing

(a) Remove access door 337CB and seal fairing 337DB to gain access to center and aft attachment fittings, FS1875 and FS1970 respectively (Ref. 6-40-00).

NOTE: The forward attachment fitting, FS1830, is accessible when the forward airgate fairing is removed.

(b) On aircraft 001-031 without SB55-016, remove attachment bolts and washers at forward, center and aft fittings (Ref. Fig. 401).

(b) On aircraft 001-031 with SB55-016 and 032-999, remove attachment bolts, washers (two-piece, self-aligning) and fillers at forward, center and aft fittings (Ref. Fig. 401).

(c) Remove lower airgate fairing assembly.

(3) Upper Airgate Fairing

(a) Remove access door 337CT and seal fairing 337DT to gain access to center and aft attachment fittings, FS1875 and FS1970 respectively (Ref. 6-40-00).

NOTE: The forward attachment fitting, FS1830, is accessible when the forward airgate fairing is removed.

(b) On aircraft 001-031 without SB55-016, remove attachment bolts and washers at forward, center and aft fittings (Ref. Fig. 401).

(b) On aircraft 001-031 with SB55-016 and 032-999, remove attachment bolts, washers (two-piece, self-aligning) and fillers at forward, center and aft fittings (Ref. Fig. 401).

(c) Remove upper airgate fairing assembly.

B. Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00) AND HORIZONTAL STABILIZER IS BETWEEN THE ZERO AND TWO DEGREES NOSE DOWN POSITION. TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

NOTE: Clean and inspect bolts, washers, fillers, etc. prior to reinstallation.

R All exterior screw fasteners should be wet installed
R for airgate forward fairing, access doors, upper and
R lower aft seals (Ref. 20-51-04).

R On aircraft 001-031,
R serrations on airgate fittings must mesh with
R serrations on stabilizer fittings.

R On aircraft 032-999,
R serrations on airgate fittings must mesh with
R serrations on stabilizer fittings. Some airgate
R fittings have plain aluminum plates with no
R serrations. At these locations, steel serrated
R plates on the horizontal stabilizer are intended to
R bite into plain aluminum faces on the airgate. Do
R not torque bolts at these locations until airgate
R assemblys are finally located.

(1) Upper Airgate Fairing

(a) Position upper airgate fairing assembly, aligning forward, center and aft fittings with respective fittings on horizontal stabilizer (Ref. Fig. 401).

R (b) Position serrated plates, plain aluminum plates, fillers and shims in same location from which removed.

(c) On aircraft 001-031 without SB55-016, install two washers on each bolt (countersunk washer next to head of bolt) and loosely install attachment bolts at forward, center and aft fittings.

(c) On aircraft 001-031 with SB55-016 and 032-999, install washer (two-piece, self-aligning) and filler on each bolt and loosely install bolts at forward, center and aft fittings.

NOTE: The convex half of the self-aligning washer is next to the bolt head.

R (d) On aircraft 001-031,
R move airgate fairing outboard as far as slots will
R permit and still nest serrations at forward,
R center and aft fittings.

R (d) On aircraft 032-999,
R move airgate fairing outboard as far as slots will
R permit and still nest serrations at center
R fitting. Serrated plates at forward and aft
R fittings must be in contact with plain aluminum
R plates.

(e) Temporarily tighten one bolt at each fitting to verify clearance between seal and fuselage. Move entire airgate fairing inboard as required to obtain clearance of 0.000 to 0.120 inch.

R NOTE: Tighten bolt just enough for serrations to
R grip plate at fittings where the serrated
R plate on the stabilizer engages a plain
R aluminum plate on the airgate fairing. At
R all other fittings, serrated plates must
R nest with serrations on stabilizer
R fittings.

R A maximum clearance of 0.250 inch is
R permissible for localized areas of not over
R 18 inches in length for the upper and lower
R fairings.

R (f) Verify serrated plates at forward, center and aft
R fittings on the horizontal stabilizer are properly
R nested with serrated plates or are in contact with
R plain aluminum plates on the airgate fairing as
R applicable.

R (g) Torque both attachment bolts at forward, center and aft fittings.

(h) Install access door 337CT and seal fairing 337DT (Ref. 6-40-00). Wet install screws (Ref. 20-51-04).

(2) Lower Airgate Fairing

(a) Position lower airgate fairing assembly, aligning forward, center and aft fittings with respective fittings on horizontal stabilizer (Ref. Fig. 401). Support airgate fairing assembly in position as required.

R (b) Position serrated plates, plain aluminum plates, fillers and shims in same location from which removed.

(c) On aircraft 001-031 without SB55-016, install two washers on each bolt (countersunk washer next to head of bolt) and loosely install attachment bolts at forward, center and aft fittings.

(c) On aircraft 001-031 with SB55-016 and 032-999, install washer (two-piece, self-aligning) and filler on each bolt and loosely install bolts at forward, center and aft fittings.

R (d) On aircraft 001-031,
R move airgate fairing outboard as far as slots will
R permit and still nest serrations at forward,
R center and aft fittings.

R (d) On aircraft 032-999,
R move airgate fairing outboard as far as slots will
R permit and still nest serrations at center
R fitting. Serrated plates at forward and aft
R fittings must be in contact with plain aluminum
R plates.

(e) Temporarily tighten one bolt at each fitting to verify clearance between seal and fuselage. Move entire airgate fairing inboard as required to obtain clearance of 0.000 to 0.120 inch.

R NOTE: Tighten bolt just enough for serrations to
R grip plate at fittings where the serrated
R plate on the stabilizer engages a plain
R aluminum plate on the airgate fairing. At
R all other fittings, serrated plates must
R nest with serrations on stabilizer
R fittings.

R A maximum clearance of 0.250 inch is
R permissible for localized areas of not over
R 18 inches in length for the upper and lower
R fairings.

R (f) Verify serrated plates at forward, center and aft
R fittings on the horizontal stabilizer are properly
R nested with serrated plates or are in contact with
R plain aluminum plates on the airgate fairing as
R applicable.

R (g) Torque both attachment bolts at forward, center and aft fittings.

(h) Install access door 337CB and seal fairing 337DB (Ref. 6-40-00). Wet install screws (Ref. 20-51-04).

(3) On aircraft 001-014 without SB55-006, Forward Airgate Fairing,

(a) Place support frame in position and install two bolts, washers, serrated plate and shim at horizontal stabilizer leading edge fitting (Ref. Fig. 401).

R NOTE: Add or remove washers as required to obtain proper grip length of bolts. Verify serrated plates are properly nested.

(b) Install two screws which attach each leg of support frame to forward attach fittings of upper and lower airgate fairings.

NOTE: Prior to installing screws, verify proper alignment of holes. If holes are not aligned, vary thickness of laminated shim. Adjust washers under bolt heads as required to obtain proper grip.

(c) Install forward inboard fitting (FS1813) with two bolts, washers and nuts (Ref. Fig. 401).

(d) With seal in approximate position, engage fitting with forward end of support frame. Slide seal aft until holes in seal align with holes in support frame.

NOTE: If a new seal is being installed, it is necessary to trim and fit the upper and lower aft ends, and locate and make attachment holes (7 upper, 7 lower) at the

attachments aft of the support frame. This must be accomplished prior to performing seal-to-fuselage clearance check.

(e) Install sufficient screws and washers to hold seal rigidly in position.

(f) Check seal-to-fuselage clearance. Clearance around entire seal must be 0.000 to 0.120 inch. Check gap, mismatch and smoothness requirements (Ref. 51-80-00, Structural Repair Manual).

NOTE: If clearances are within limits, proceed with the following Step.

R

(g) Wet install all remaining screws and washers. Remove and wet install all screws previously temporarily installed.

NOTE: If seal-to-fuselage clearance is not within limits, proceed with the following steps.

(h) Make spot checks around seal to determine distance that support frame must be moved inboard to meet specified seal clearance.

(i) Remove seal.

(j) Mark position of support frame in relation to stabilizer leading edge fitting prior to loosening two attachment bolts.

(k) Loosen two bolts which attach support frame to leading edge of horizontal stabilizer fitting.

(l) Move support frame assembly inboard distance previously determined and tighten bolts.

NOTE: Verify that serrated plates are properly nested.

(m) Reinstall seal with sufficient screws and washers to hold seal rigidly in position.

(n) Recheck seal-to-fuselage for 0.000 to 0.120 inch clearance. Recheck gap, mismatch and smoothness requirements (Ref. 51-80-00, Structural Repair Manual).

NOTE: If clearances are within limits, proceed with the following Step.

R

(p) Wet install all remaining screws and washers. Remove and wet install all screws previously temporarily installed.

(3) On aircraft 001-014 with SB55-006 and 015-999, Forward Airgate Fairing,

(a) Place support frame in position and install two bolts, washers, serrated plate and shim at horizontal stabilizer leading edge fitting (Ref. Fig. 401).

R NOTE: Add or remove washers as required to obtain proper grip length of bolts. Verify serrated plates are properly nested.

(b) Install two screws which attach each leg of support frame to forward attach fittings of upper and lower airgate fairings.

NOTE: Prior to installing screws, verify proper alignment of holes. If holes are not aligned, vary thickness of laminated shim. Adjust washers under bolt heads as required to obtain proper grip.

(c) Place seal and steel plate in position on support frame and install sufficient screws and washers to hold seal rigidly in position to perform seal-to-fuselage clearance check.

NOTE: If a new seal is being installed, it is necessary to trim and fit the upper and lower ends and locate and make 12 holes (6 upper, 6 lower) at the attachments aft of the support frame. This must be accomplished prior to performing seal-to-fuselage clearance check.

(d) With horizontal stabilizer in the zero to two degrees nose down position, check seal-to-fuselage clearance. Clearance around entire seal must be 0.000 to 0.120 inch. Check gap, mismatch and smoothness requirements (Ref. 51-80-00, Structural Repair Manual).

R NOTE: If clearances are within limits, proceed with the following Steps.

(e) Wet install all remaining screws and washers. Remove and wet install all screws previously temporarily installed.

(f) Recheck seal-to-fuselage for 0.000 to 0.120 inch clearance. Recheck gap, mismatch and smoothness requirements (Ref. 51-80-00, Structural Repair Manual).

NOTE: Tabs on steel plate may be bent to make *minor and localized clearance adjustments.*

R NOTE: If seal-to-fuselage clearances are not within limits, proceed with the following Steps.

(g) Make spot checks around seal to determine distance that seal and support frame must be moved inboard to meet specified clearance.

(h) Remove steel plate and seal.

(i) Mark position of support frame in relation to stabilizer leading edge fitting prior to loosening two attachment bolts.

(j) Loosen two attachment bolts and move support frame assembly inboard distance previously determined and retighten bolts.

R NOTE: Verify serrated plates are properly nested.

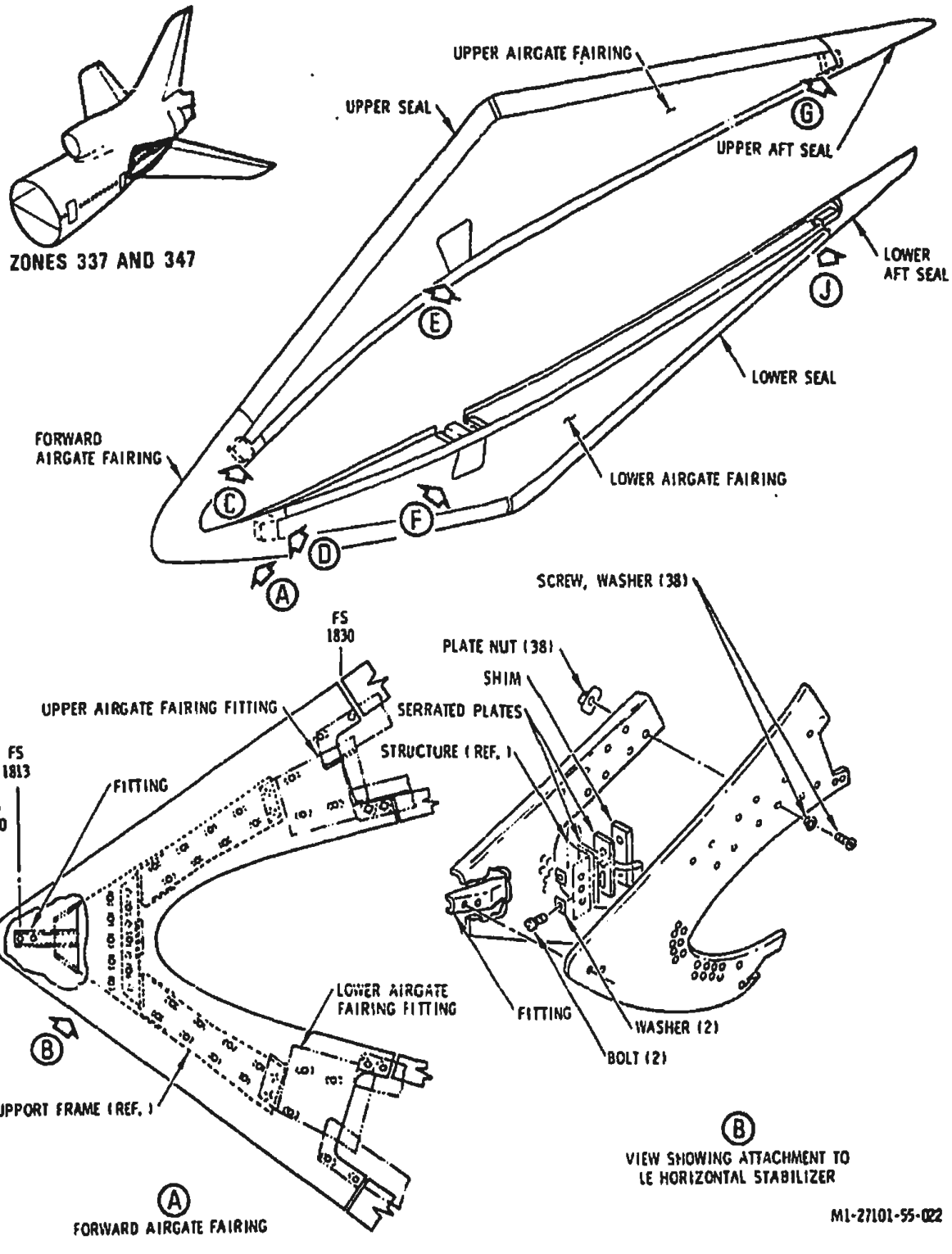
(k) Reinstall seal and steel plate with sufficient screws and washers to hold seal rigidly in position.

(l) Recheck seal-to-fuselage for 0.000 to 0.120 inch clearance. Recheck gap, mismatch and smoothness requirements (Ref. 51-80-00, Structural Repair Manual).

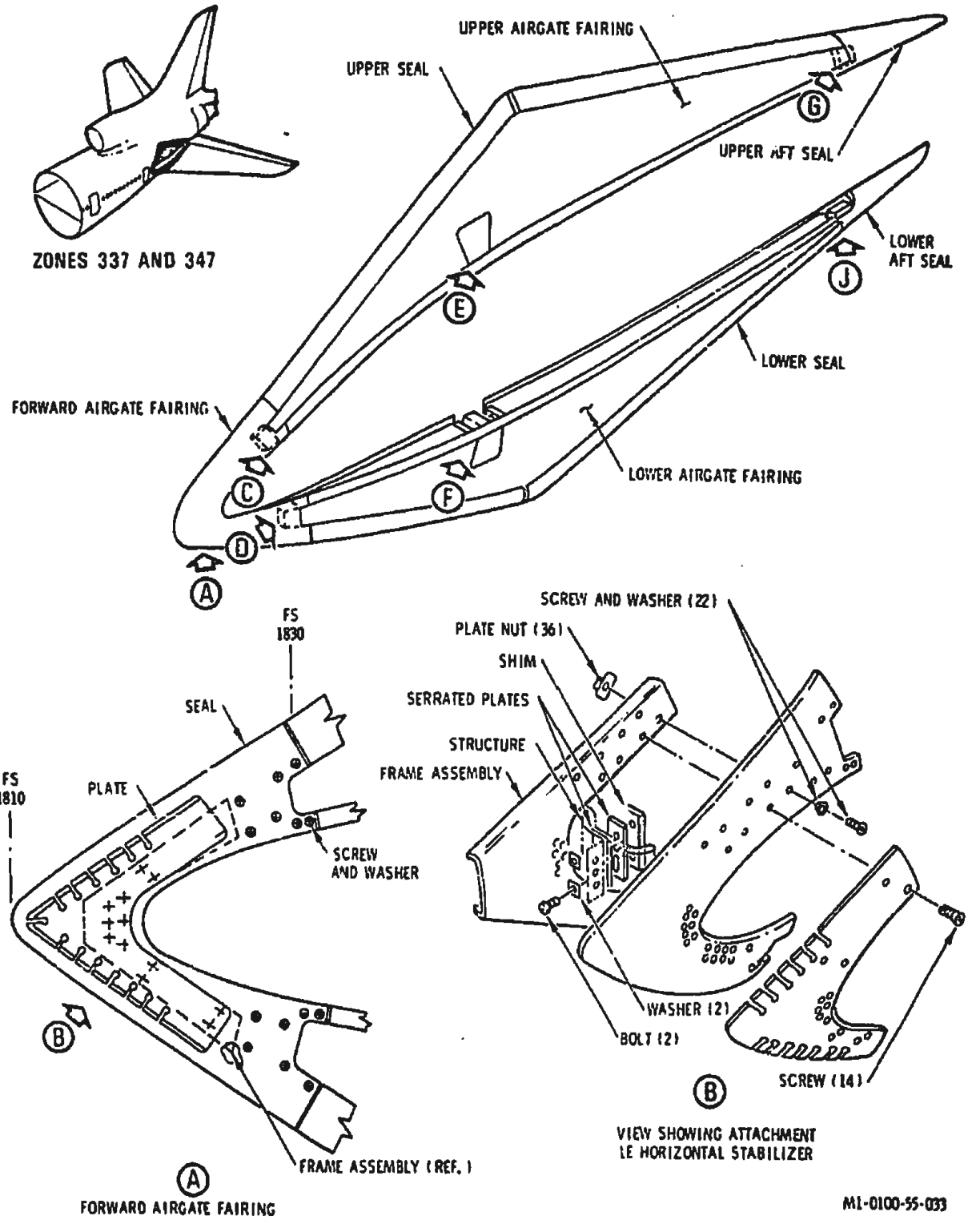
R NOTE: If clearances are within limits, proceed with the following Steps.

(m) Wet install all remaining screws and washers. Remove and wet install all screws previously temporarily installed.

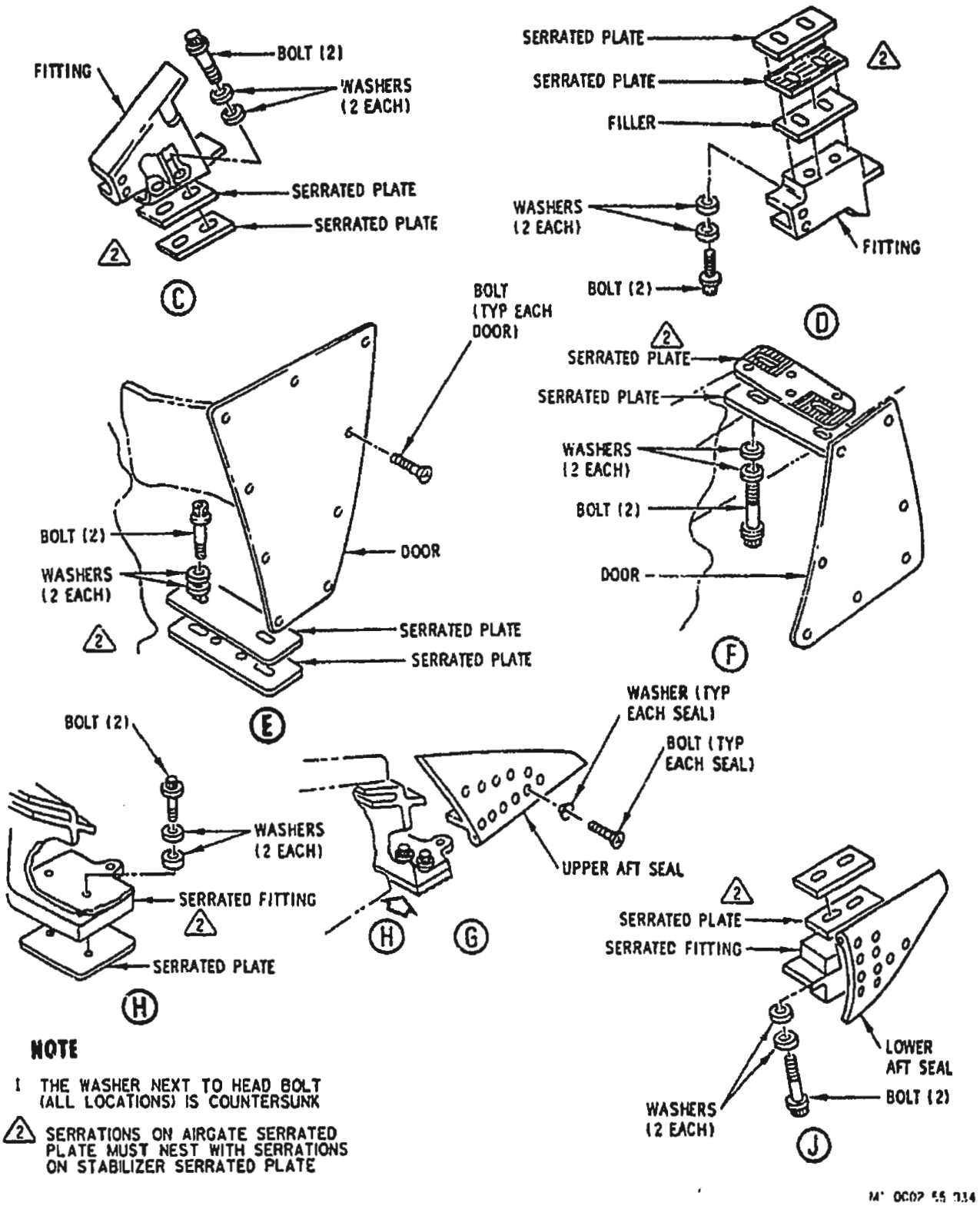
(n) Fill all slots in steel plate with PR1301BT-K sealing compound, or equivalent. Smooth compound at all slots and remove excess.



Airgate Fairing - Removal and Installation
Figure 401 (Sheet 1)



Airgate Fairing - Removal and Installation
Figure 401 (Sheet 1)



NOTE

1 THE WASHER NEXT TO HEAD BOLT (ALL LOCATIONS) IS COUNTERSUNK

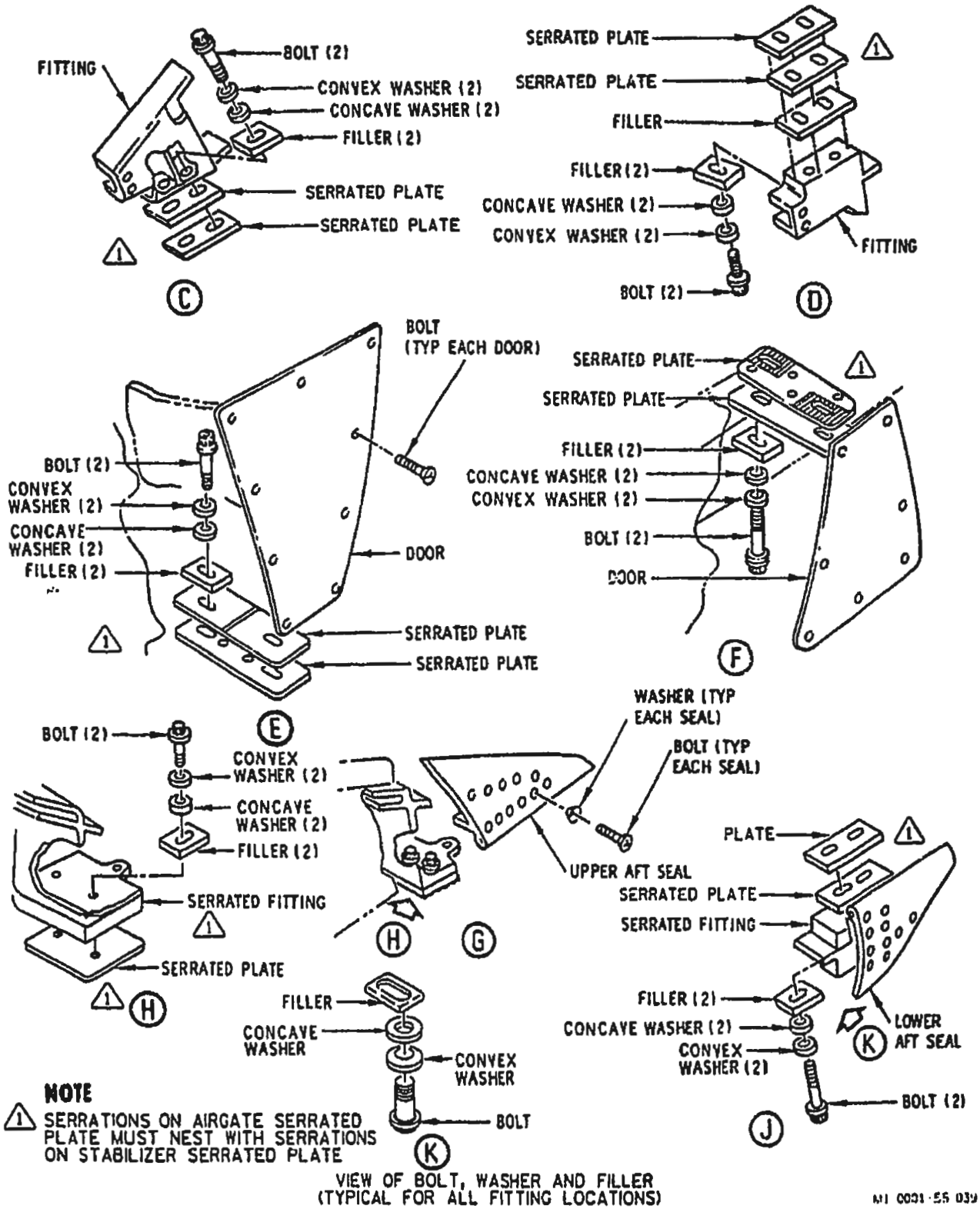
2 SERRATIONS ON AIRGATE SERRATED PLATE MUST NEST WITH SERRATIONS ON STABILIZER SERRATED PLATE

M* 0007 55 0314

R Airgate Fairing - Removal and Installation
R Figure 401 (Sheet 2)

R EFFECTIVITY: 001-031 WITHOUT SB55-016

001B

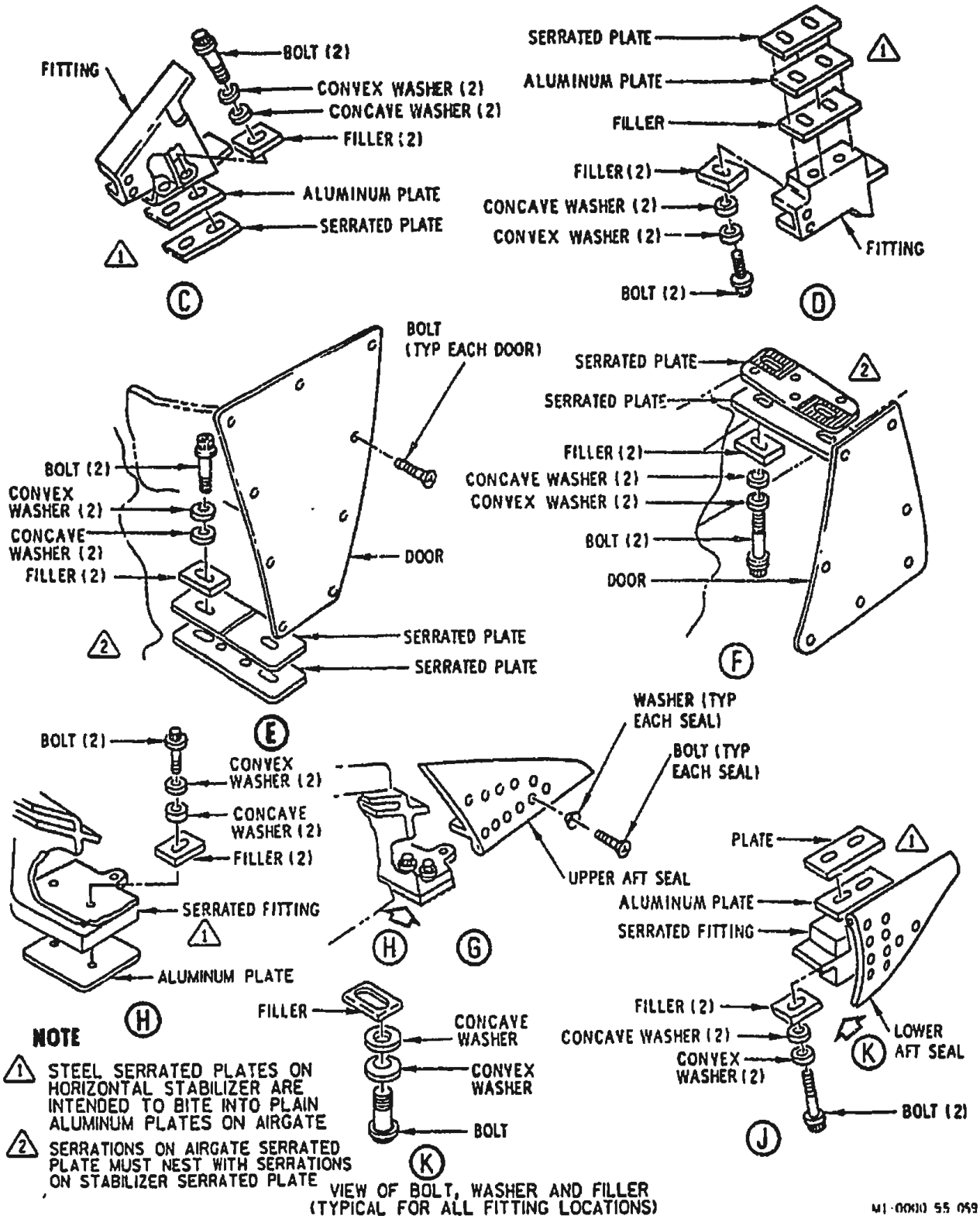


VIEW OF BOLT, WASHER AND FILLER
(TYPICAL FOR ALL FITTING LOCATIONS)

M1 0031-55 039

R Airgate Fairing - Removal and Installation
R Figure 401 (Sheet 2)

R EFFECTIVITY: 001-031 WITH SB55-016
R
001B



NOTE

1. STEEL SERRATED PLATES ON HORIZONTAL STABILIZER ARE INTENDED TO BITE INTO PLAIN ALUMINUM PLATES ON AIRGATE
2. SERRATIONS ON AIRGATE SERRATED PLATE MUST NEST WITH SERRATIONS ON STABILIZER SERRATED PLATE

VIEW OF BOLT, WASHER AND FILLER
(TYPICAL FOR ALL FITTING LOCATIONS)

M1-00010 55 059

R Airgate Fairing - Removal and Installation
R Figure 401 (Sheet 2)

R # AIRGATE FAIRING SEALS - REMOVAL AND INSTALLATION

R 1. General

R This procedure applies to both left and right airgate fairing seals. The seal installation consists of a two-segment silicone rubber seal on both the upper and lower fairing halves, and a continuous seal on both fairings where contact is made with the upper and lower surfaces of the horizontal stabilizer.

R 2. Equipment and Materials

R Workstand

R Sealing Compound, LAC Spec LCM40-2121A, or equivalent

R 3. Referenced Procedures

R	29-11-00	Hydraulic Power System - Maintenance Practices
R	55-16-00	Airgate Fairing, - Removal and Installation
R	PB75-425	Environmental Sealing of Model L-1011 Airplane

R 4. Removal/Installation

R WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

R A. Removal

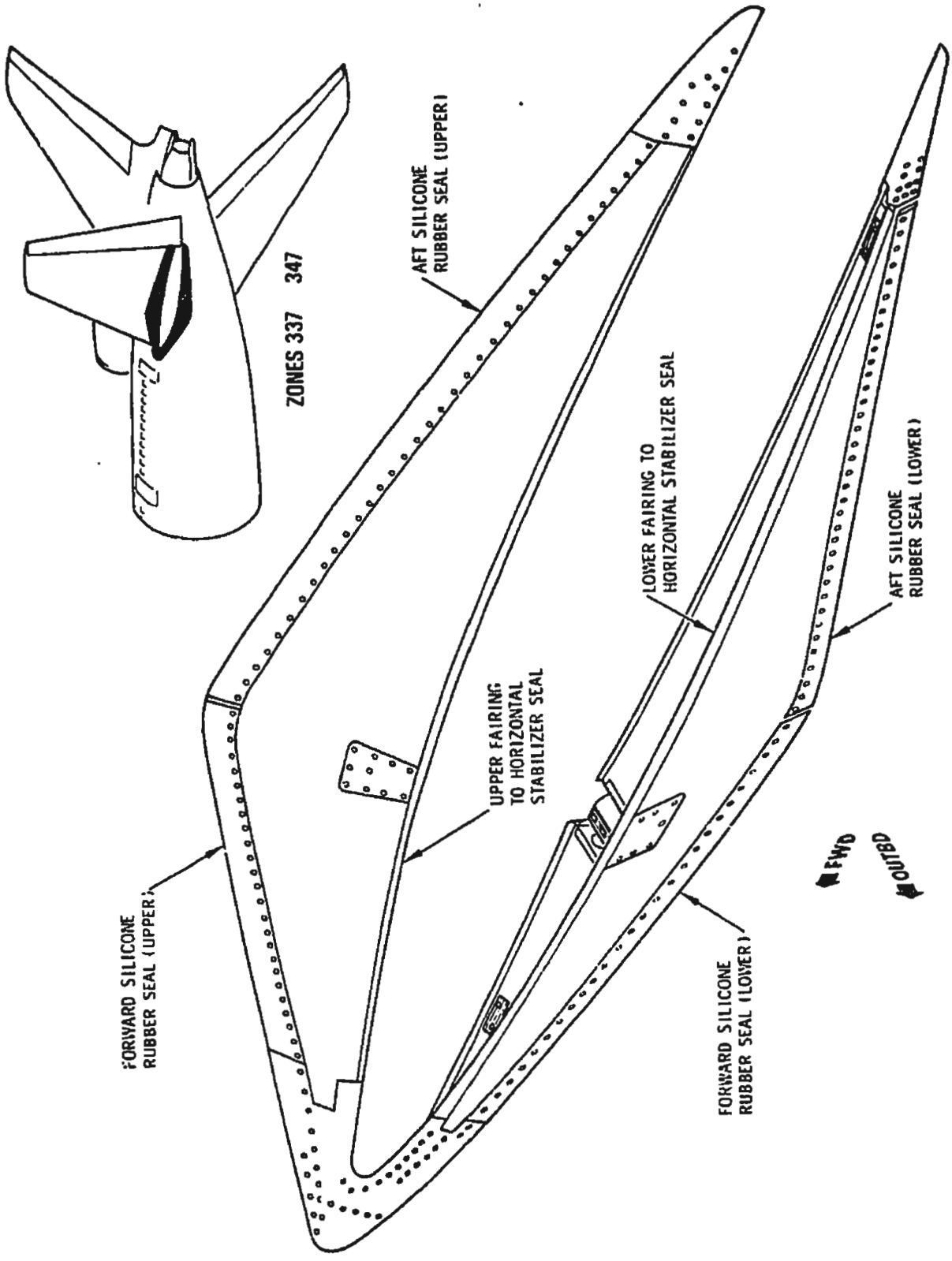
R (1) Position workstand under the horizontal stabilizer.

R (2) Remove airgate fairing assemblies (Ref. 55-16-00) and place on workbench.

R (3) Upper Airgate Fairing Seals

R (a) Remove screws attaching forward and aft silicone rubber segments to fairing upper edge (Ref. Fig. 401).

R (b) Remove bolts, washers, and three-piece retainer which secures continuous seal along fairing edge.



R R Airgate Fairing Seals - Removal and Installation
Figure 401

R R EFFECTIVITY: ALL

(4) Lower Airgate Fairing Seals

(a) Remove screws attaching forward and aft silicone rubber seal segments on the fairing lower edge.

(b) Remove bolts, washers, and three-piece retainer which secures continuous seal along fairing upper edge.

B. Installation

(1) Position workstand under horizontal stabilizer.

(2) Upper Airgate Fairing Seals

(a) Apply sealing compound to each attachment bolt and screw and wet-install in accordance with Process Bulletin PB75-425.

(b) Install bolts and washers in three-piece retainer and continuous seal in fairing lower edge.

(c) Install screws attaching forward and aft silicone rubber seal segments in the fairing upper edge.

(3) Lower Airgate Fairing Seals

(a) Perform Step 4B(2)(a).

(b) Install bolts, washers, and three-piece retainer which secures continuous seal along fairing upper edge.

(c) Install screws attaching forward and aft silicone rubber seal segments along fairing lower edge.

(4) Install airgate fairing assembly (Ref. 55-16-00).

(5) Remove and stow workstand.

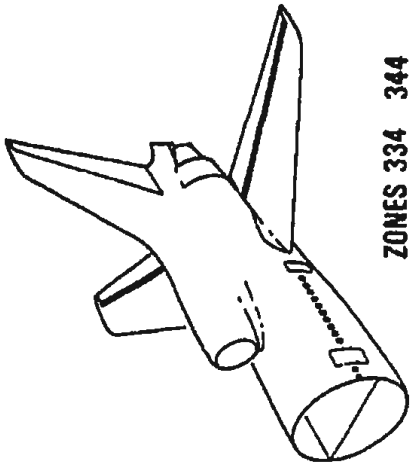
(6) Remove tags installed at beginning of Paragraph 4.

AERODYNAMIC SEALS - DESCRIPTION AND OPERATION

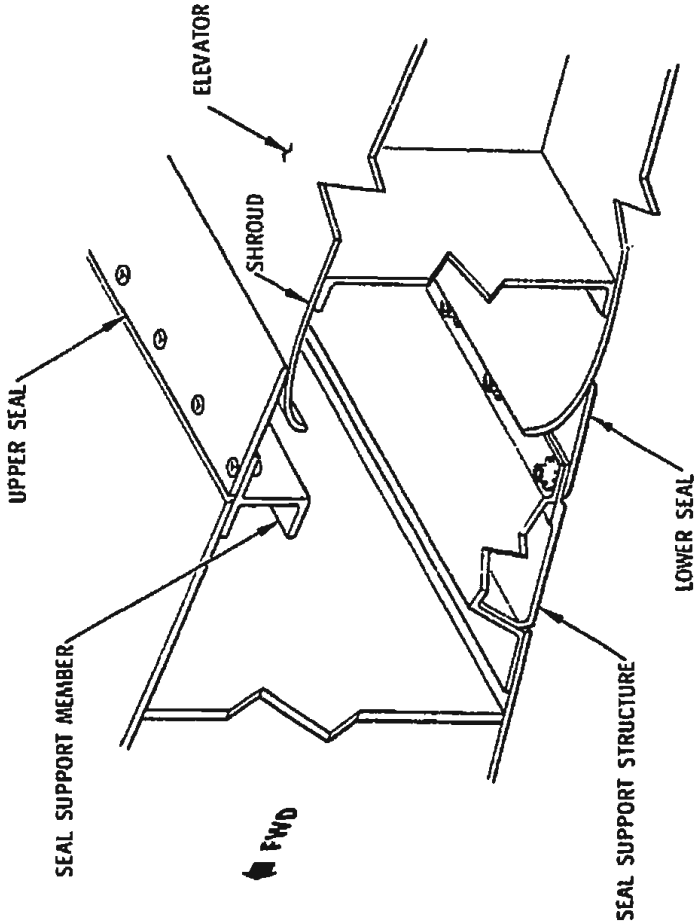
1. General

Flat blade-type seals (Ref. Fig. 1) are located along the upper and lower aft edges of the horizontal stabilizer trailing edge. The seals are flexible air closures between the horizontal stabilizer and the elevator leading edge. The seals, which are segmented and easily accessible, are fastened to the support structure with flush-head screws. The seals are made of fiber glass reinforced silicone rubber with an outer cover of wear-resistant Dacron.

HH 4448
M1-A00-55-014



ZONES 334 344



Elevator Aerodynamic Seals
Figure 1

HORIZONTAL STABILIZER AERODYNAMIC SEALS REMOVAL AND INSTALLATION

1. General

This procedure applies to the upper and lower, left and right aerodynamic seal installations. The upper surface (L and R) has seal segments extending along the entire length of the horizontal stabilizer. The lower surface seals (L and R) consist of individual seal segments and are attached at the aft end of each hinged access door (Ref. Fig. 401).

R 2. Equipment and Materials

R Sealant, PR7401K, or equivalent

R 3. Referenced Procedures

R 20-51-04 Environmental Sealing of Model L-1011 Airplane

R 29-11-00 Hydraulic Power System - Maintenance Practices

R 4. Removal/Installation

R A. Removal

R WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT
R OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND
R OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE
R HYDRAULIC SERVICE PANEL, ZONE 147.

R (1) Verify that all hydraulic systems are off (Ref.
R 29-11-00), and that the FE/SO hydraulic system panel,
R zone 215, and hydraulic service panel, zone 147, are
R tagged.

R (2) Upper Seals

R (a) On aircraft 001-031 without SB55-014,
R remove screws and washers attaching seal to
R support structure (Ref. Fig. 401). Retain screws
R and washers for reuse.

R (a) On aircraft 001-031 with SB55-014 and 032-999,
R remove screws, washers, and retainer attaching
R seal to support structure (Ref. Fig. 401). (b)
R Remove seals.

R NOTE: If more than one seal is being replaced, identify retainers for correct location at time of reinstallation.

R (3) Lower Seals

(a) Open access door(s) as required to gain access to seal(s) to be removed.

(b) Remove screws, washers, and nuts attaching seal to access door (Ref. Fig. 401). Retain screws, washers, and nuts for reuse.

(c) Remove Seal.

B. Installation

NOTE: Prior to reinstallation, inspect all removed parts and replace as required. Remove sealant from bolts/screws, washers, nuts and from around fastener holes, etc.; After sealant is removed, clean as required (Ref. 20-51-04).

R (1) Upper Seals

R (a) Apply PR7401K sealant to faying surfaces of seal and support structure.

R (b) Position replacement seal segment(s) on support structure, aligning all attachment holes.

R (c) Apply sealing compound (wet-install) to each screw (Ref. 20-51-04).

R (d) On aircraft 001-031 without SB55-014, install screws and washers.

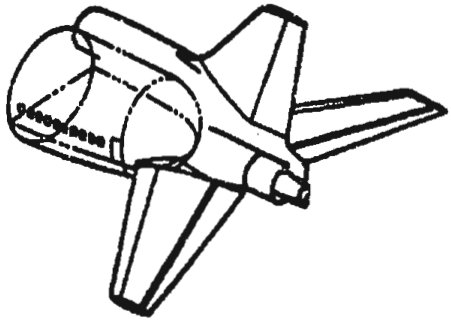
R (d) On aircraft 001-031 with SB55-014, position seal retainer on seal and install screws and washers.

R Bend serrated tabs on retainer as required to ensure contact of seal or elevator leading edge skin.

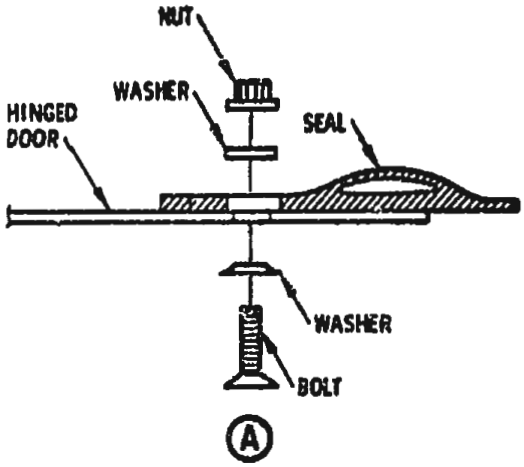
R (e) Check seals for proper contact with elevator leading edge skin.

R (f) Install lower seals, or if not required, proceed to Step 4B(3).

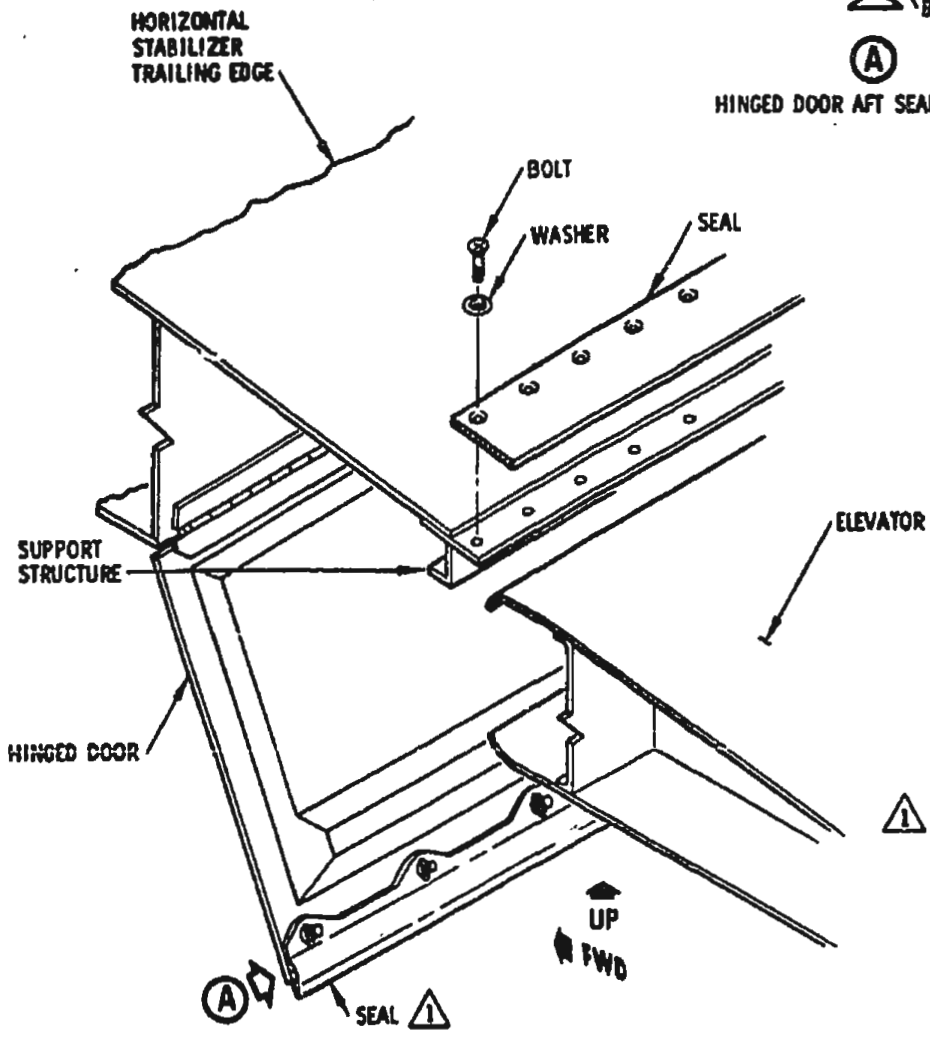
R (2) Lower Seals



ZONE 334, 344



HINGED DOOR AFT SEAL (TYPICAL)



NOTE

1. LOWER DOOR SEALS HAVE ROUND HOLES OR ELONGATED HOLES. SEALS WITH ELONGATED HOLES MAY BE ADJUSTED TO ASSURE CONTACT OF SEAL ON ELEVATOR SKIN

M1-0000-55-049

R Horizontal Stabilizer Aerodynamic Seals - Removal and Installation
R Figure 401

EFFECTIVITY: 001-031 WITHOUT SB55-014

001B

R (a) Position replacement seal(s) on proper access
R door(s); aligning all attachment holes.

R NOTE: Lower door seals have round holes or elongated
R holes. Seals with elongated holes may be
R adjusted to assure contact of seal on elevator
R skin.

(b) Apply sealing compound (wet-install) to each screw (Ref. 20-51-04).

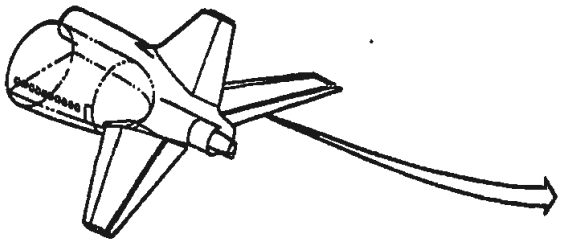
(c) Install screws, washers and nuts.

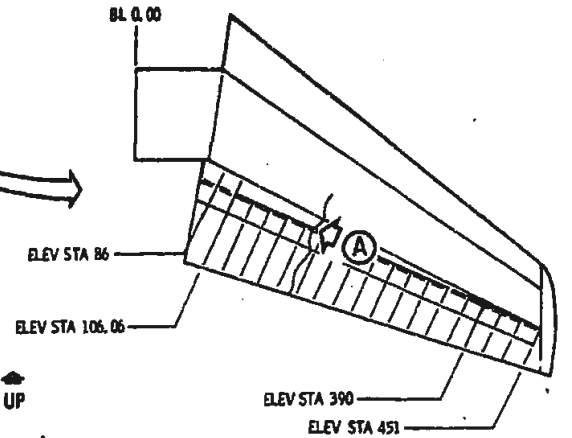
(d) Check seals for proper contact with elevator
R leading edge skin, and adjust as required.

R (3) Prepare for operation by clearing area around
R horizontal stabilizer of all tools and equipment.

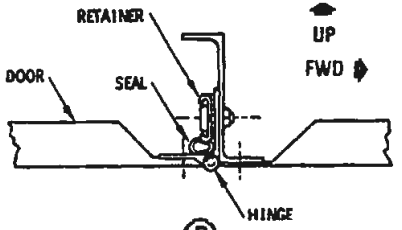
R (4) Remove tags [Ref. Step 4A(1)].

R (5) Operate elevator through full travel to assure that
R seals maintain contact, in all positions, with elevator
R leading edge skin. Make adjustments as required.

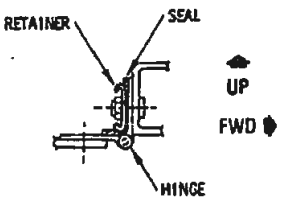




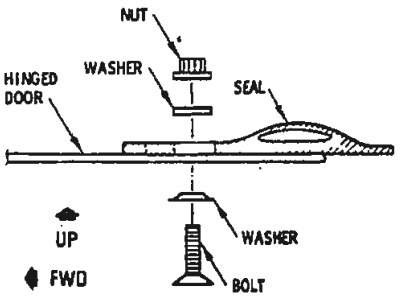
D
SEAL INSTALLATION
ELEV STA 390-451



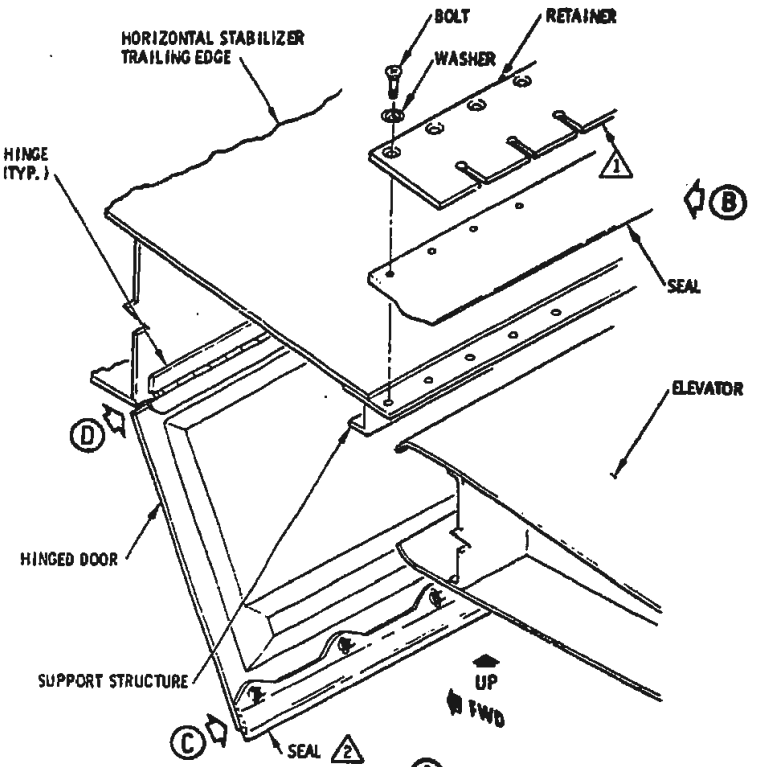
D
SEAL INSTALLATION
ELEV STA 106 TO 390



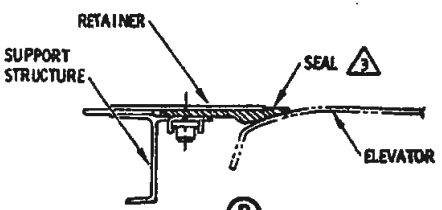
D
SEAL INSTALLATION
AT ROOT RIB ELEV STA 86



C
HINGED DOOR AFT SEAL (TYPICAL)



A
TYPICAL SECTION



B
UPPER SURFACE SEAL INSTALLATION (TYP.)

NOTE

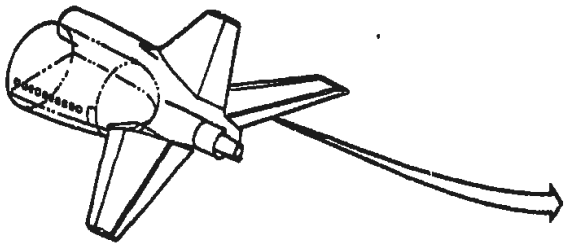
1. BEND TABS ON SEAL RETAINER AS REQUIRED TO ENSURE CONTACT OF SEAL ON ELEVATOR SKIN
2. LOWER DOOR SEALS HAVE ROUND HOLES OR ELONGATED HOLES. SEALS WITH ELONGATED HOLES MAY BE ADJUSTED TO ASSURE CONTACT OF SEAL ON ELEVATOR SKIN
3. APPLY PR7401K SEALANT TO FAYING SURFACES OF SEAL AND SUPPORT STRUCTURE

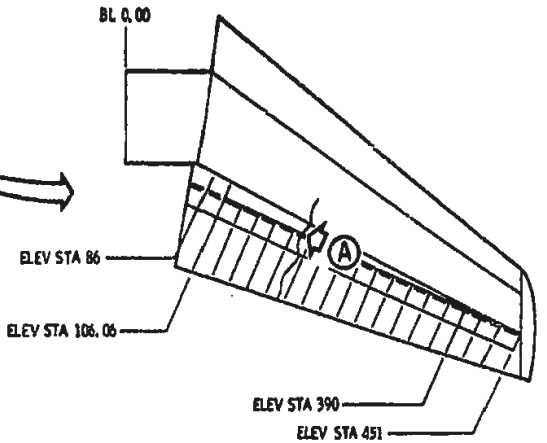
M1-0000-55-050

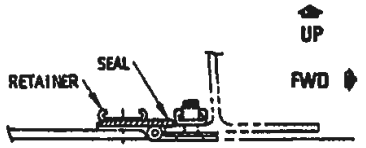
R Horizontal Stabilizer Aerodynamic Seals - Removal and Installation
R Figure 401

EFFECTIVITY: 001-031 WITH SB55-014

001B







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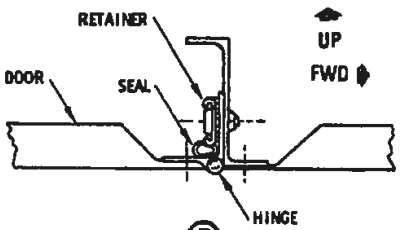
SEAL INSTALLATION
ELEV STA 390-451



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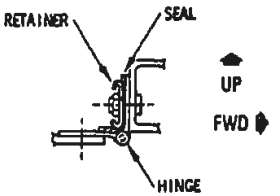
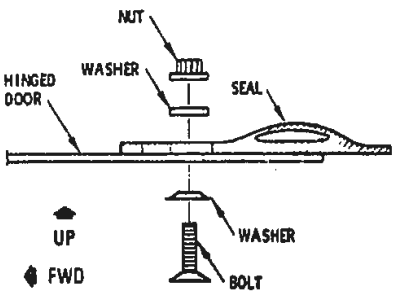
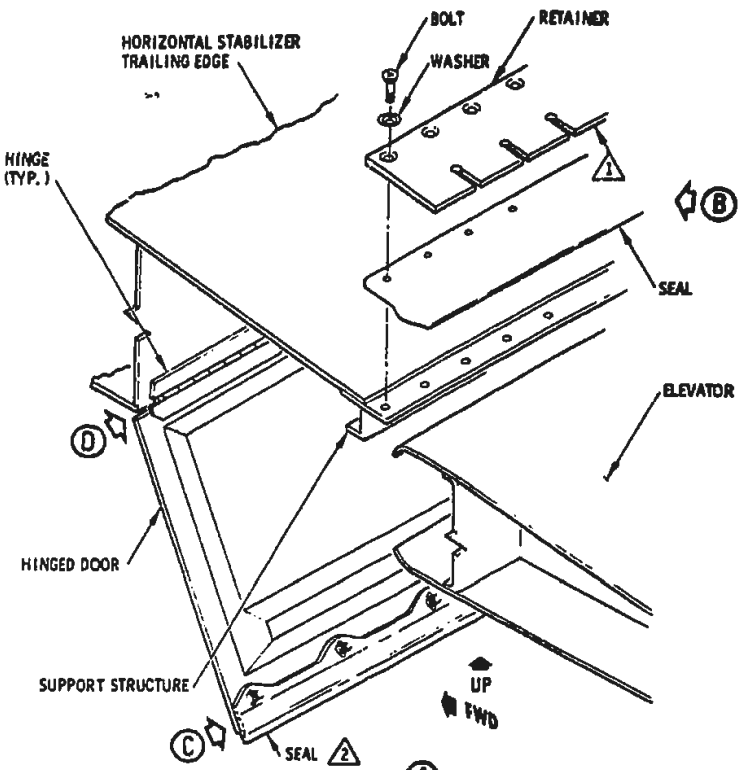
SEAL INSTALLATION
ELEV STA 106 TO 390



D
SEAL INSTALLATION
AT ROOT RIB ELEV STA 86



C
HINGED DOOR AFT SEAL (TYPICAL)



A
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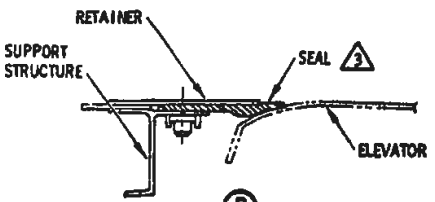


B
UPPER SURFACE SEAL INSTALLATION (TYP.)

NOTE

1. BEND TABS ON SEAL RETAINER AS REQUIRED TO ENSURE CONTACT OF SEAL ON ELEVATOR SKIN
2. LOWER DOOR SEALS HAVE ELONGATED HOLES FOR ADJUSTMENT TO ASSURE CONTACT OF SEAL ON ELEVATOR SKIN
3. APPLY PR7401K SEALANT TO FAYING SURFACES OF SEAL AND SUPPORT STRUCTURE

M1-0000-55-054

R Horizontal Stabilizer Aerodynamic Seals - Removal and Installation
R Figure 401

R EFFECTIVITY: 032-999
R
001B

ELEVATOR - DESCRIPTION AND OPERATION

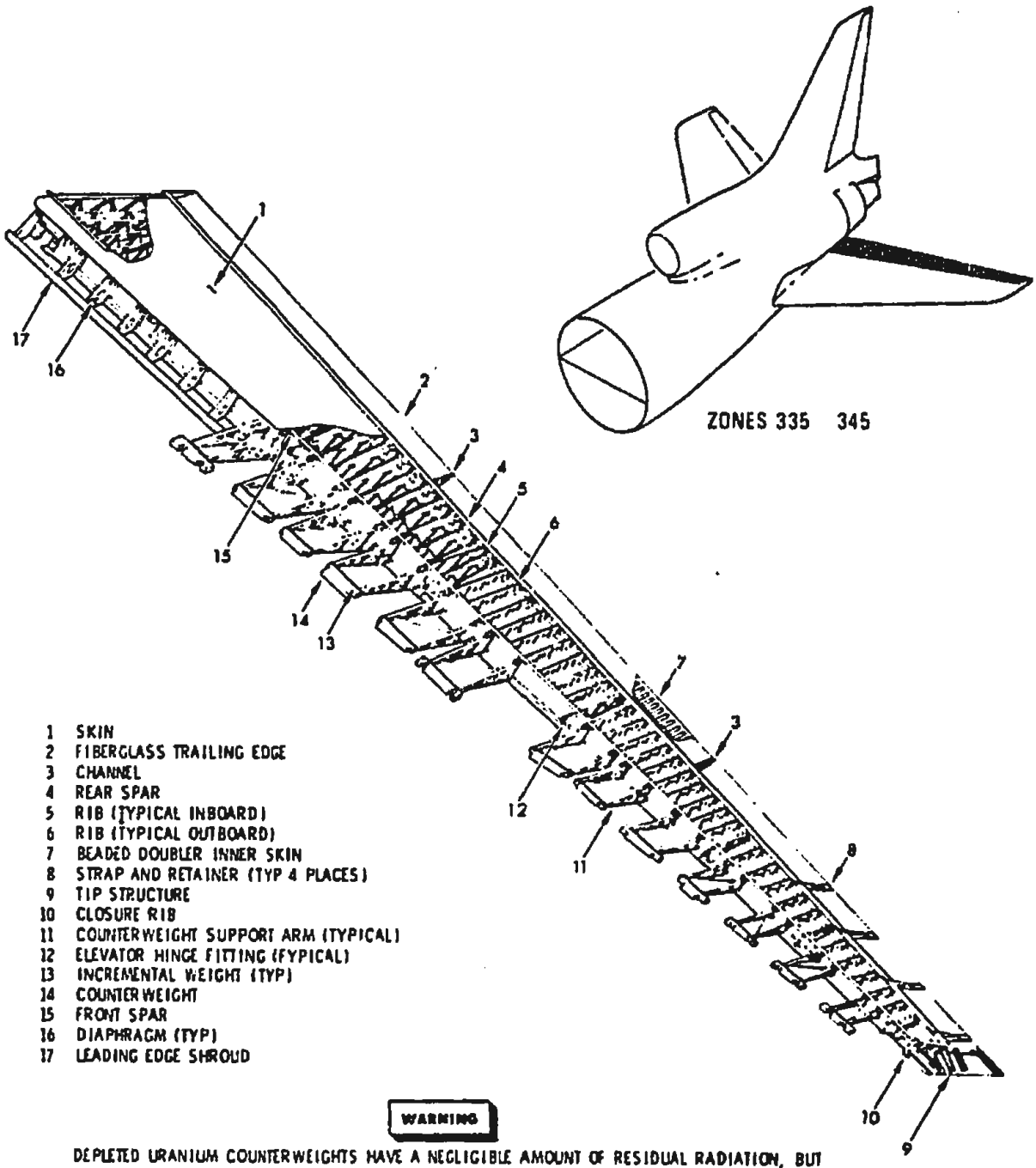
1. General

The elevator (Ref. Fig. 1) assemblies are hinged from each of the outboard horizontal stabilizer sections. The assemblies are of conventional skin and rib design and are actuated at the inboard end by linkages from the horizontal stabilizer structure. The elevators have front and rear spars with stiffened ribs, hinge brackets, counterweight arms, counterweights, and upper and lower skin panels. A fiber glass trailing edge wedge is located aft of the rear spar.

WARNING: DEPLETED URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING, SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF FINELY DIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL HEAVY METALS (i.e. LEAD & CADMIUM). IF THE PLATING OR PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE.

R Depleted uranium balance weights which have encountered
R scratched or gouged damage which has penetrated the plating
R should be repaired by spraying a coat of paint (all purpose
R enamel or equivalent) on the damaged area immediately after
R damage is noted.

R Depleted uranium balance weights that are either damaged beyond
R repair or surplus should be treated in accordance with
R Structural Repair Manual 51-90-00.



1 SKIN
2 FIBERGLASS TRAILING EDGE
3 CHANNEL
4 REAR SPAR
5 RIB (TYPICAL INBOARD)
6 RIB (TYPICAL OUTBOARD)
7 BEADED DOUBLER INNER SKIN
8 STRAP AND RETAINER (TYP 4 PLACES)
9 TIP STRUCTURE
10 CLOSURE RIB
11 COUNTERWEIGHT SUPPORT ARM (TYPICAL)
12 ELEVATOR HINGE FITTING (TYPICAL)
13 INCREMENTAL WEIGHT (TYP)
14 COUNTERWEIGHT
15 FRONT SPAR
16 DIAPHRAGM (TYP)
17 LEADING EDGE SHROUD

WARNING

DEPLETED URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING, SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF FINELY DIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL HEAVY METALS (I.E. LEAD & CADMIUM). IF THE PLATING OR PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE

M1-0102-55-008

R
R

Elevator Structure
Figure 1

EFFECTIVITY: ALL

001B

MAIN FRAME - DESCRIPTION AND OPERATION

1. General

The elevator main frame is composed of front and rear spars, ribs, shrouds, and a trailing edge wedge.

The elevator front spar assembly consists of an aluminum alloy web with upper and lower extruded caps made of 7075-T76 aluminum alloy. Stiffeners at each rib location support the intermediate ribs. Inspection holes are provided on either side of each hinge rib. Covers with Velcro tape fasteners are used over all inspection holes.

The rear spar is a channel section made from 7075-T6 aluminum alloy sheet spliced in three places. It is provided with vertical stiffeners and circular doublers around lightening holes.

With the exception of the outboard rib, the hinge ribs are machined from 7075-T7351 aluminum alloy plate. The ribs have upper and lower integral caps, and truss-type diagonal side flanges with triangular lightening holes. The outboard hinge rib is a built-up, fail-safe unit with a web and dual upper and lower caps. There are two types of intermediate ribs: extruded aluminum truss ribs located inboard, and pressed sheet aluminum ribs with lightening holes located outboard. The outboard end closure rib consists of web and extruded aluminum upper and lower caps. The intermediate ribs are constructed of 7075-T6 aluminum alloy sheet and 7075-T73 aluminum alloy extrusion.

The trailing edge wedge is made from laminated layers of fiber glass, internally stiffened with bonded beaded doublers. The trailing edge is riveted to the rear spar in segmented sections.

Rounded leading edge shrouds on the forward flange of the front spar seal the elevator leading edge to the horizontal stabilizer trailing edge. The shrouds are made of 7075-T6 aluminum alloy skins with 2024 aluminum alloy doublers. The shroud installation consists of three elements on the upper surface and eight elements on the lower surface. Three of the lower elements are removable door panels used to provide access for servicing hinge bearings, flutter dampers, and control drive rods.

R Either 10 or 13 pairs of counterweight support arms are fastened
R to the front face of the forward spar. Each pair of arms
R support a counterweight made of depleted uranium alloy. The
R counterweights differ in size, and shape and vary in weight from approximately 6 to 27 pounds. Each pair of counterweight

support arms is braced with a diagonal strut constructed of extruded 7075 aluminum alloy. The elevators have either 10 or 13 counterweights. The elevators with 10 counterweights require the use of two hydraulic dampers located at hinge locations No. 3 and No. 7. Each configuration is interchangeable and may also be mixed left and right (Ref. 27-31-00).

R WARNING: DEPLETED URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE
R AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING,
R SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM
R SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS
R PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF
R FINELY DIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE
R PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL
R HEAVY METALS (i.e. LEAD & CADMIUM). IF THE PLATING OR
R PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR
R GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE.

The elevator tip assembly has deep-formed 2024-T3 and 6061-T6 sheet aluminum alloy skins. Tips are supported on three sheet aluminum former ribs and supporting angles. The tip ends of the elevator each support two static dischargers.

2. Depleted Uranium Balance Weights

WARNING: XCD URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING, SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF FINELY DIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL HEAVY METALS (i.e. LEAD & CADMIUM). IF THE PLATING OR PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE.

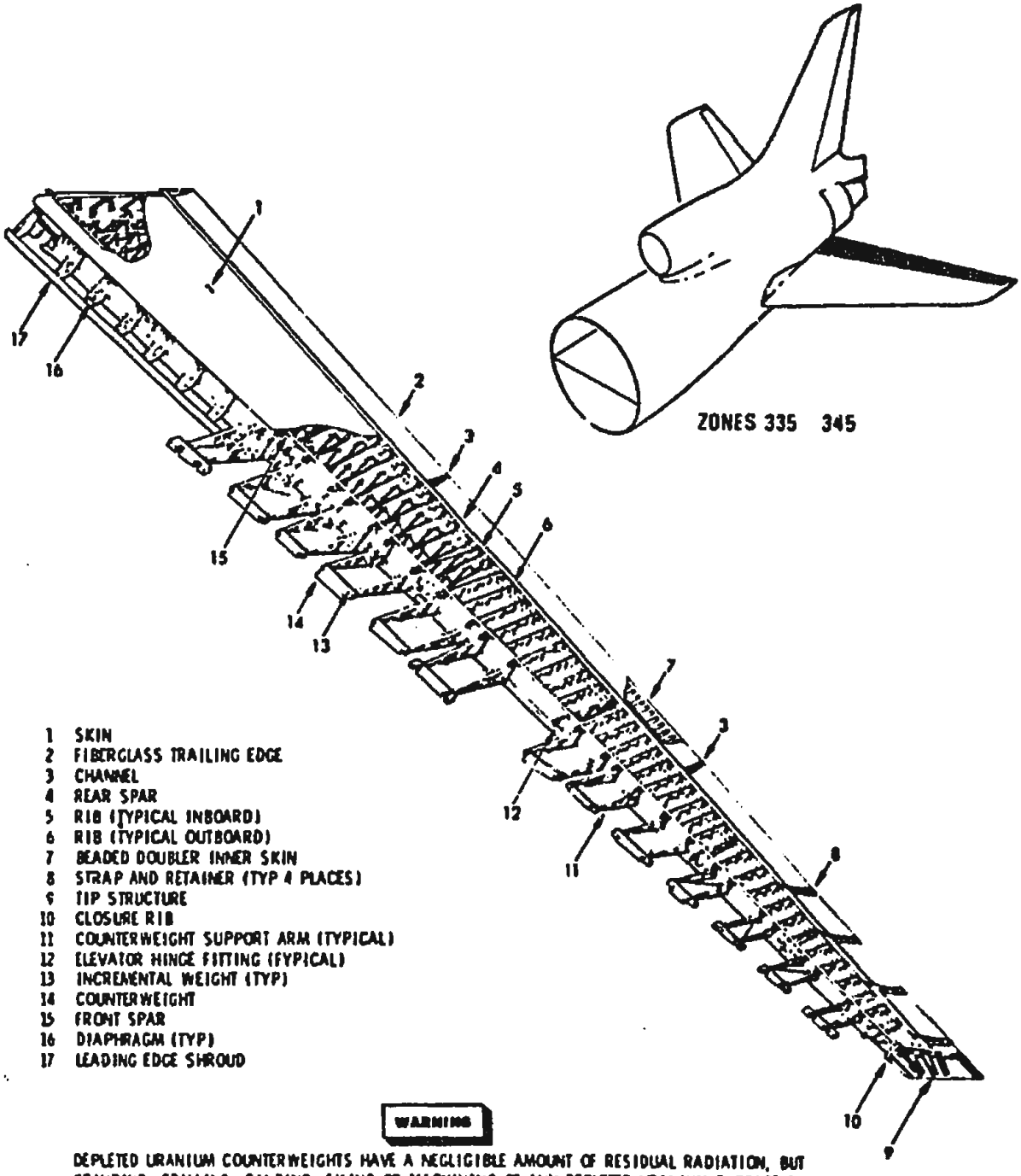
The balance weights installed on the elevators and rudder are made from depleted uranium. Each elevator has a series of incremental weights while the rudder has a large counterweight at its tip. This uranium material contains approximately 0.2 percent U-235 with the remainder being the non-fissionable isotope U-238. Under normal conditions and under any conceivable abuse of normal conditions, there will be no biological damage caused by the radiation from these unimportant quantities of source material. Therefore, these balance weights can be handled in the same way as any other aircraft part if their high density is taken into consideration to avoid underestimating their weight. The depleted uranium weights are impression stamped with the following information:

"DEPLETED URANIUM - UNAUTHORIZED ALTERATIONS PROHIBITED"

The weights have been nickel-coated, then plated with cadmium to a minimum thickness of 0.0005 inch for protection against corrosion. Additional temporary corrosion preventive such as LPS-3 or equivalent (Ref. 20-51-09 and 20-51-10) must be reapplied periodically to provide optimum protection. Radiation from the weights is negligible.

Depleted uranium balance weights which have encountered scratched or gouged damage which has penetrated the plating should be repaired by spraying a coat of paint (all purpose enamel or equivalent) on the damaged area immediately after damage is noted.

Depleted uranium balance weights that are either damaged beyond repair or surplus should be treated in accordance with Structural Repair Manual 51-90-00.



1 SKIN
2 FIBERGLASS TRAILING EDGE
3 CHANNEL
4 REAR SPAR
5 RIB (TYPICAL INBOARD)
6 RIB (TYPICAL OUTBOARD)
7 BEADED DOUBLER INNER SKIN
8 STRAP AND RETAINER (TYP 4 PLACES)
9 TIP STRUCTURE
10 CLOSURE RIB
11 COUNTERWEIGHT SUPPORT ARM (TYPICAL)
12 ELEVATOR HINGE FITTING (TYPICAL)
13 INCREMENTAL WEIGHT (TYP)
14 COUNTERWEIGHT
15 FRONT SPAR
16 DIAPHRAGM (TYP)
17 LEADING EDGE SHROUD

WARNING

DEPLETED URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING, SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF FINELY DIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL HEAVY METALS (I.E. LEAD & CADMIUM). IF THE PLATING OR PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE

M1-0102-55-008

R R Elevator Structure and Counterweights
Figure 1

R R ELEVATOR TRAILING EDGE PANEL INSPECTION AND CHECK

R 1. General

R Elevator trailing edge panels constructed of Kevlar/Nomex R honeycomb material have been found to accumulate water/moisture. R Trailing edges constructed of this material can be inspected by R x-ray, moisture meter techniques or in-situ balance procedures. R In-situ balancing of trailing edges can be accomplished by a R preferred method using a compression load cell or an alternate R method using a platform scale.

R NOTE: Aircraft with fiberglass trailing edges do not require R inspection/check for water/moisture accumulation. R Fiberglass trailing edges are recognizable by the rippled R surface and metal close-out ribs.

R Visual inspection may be performed within one and one-half hours R after flight for localized evidence of frost on the lower R surface. Moisture condensation or areas feeling cold to the R touch can indicate entrapped ice. Visual and coin-tap R inspection may also be performed in accordance with Structural R Repair Manual 51-50-07.

R 2. Equipment and Materials

R A. X-Ray Inspection

R (1) For equipment, refer to Nondestructive Testing Manual, R Part 2, X-Ray, 55-21-80.

R (2) 6 inch X 4 inch clear plastic template with 1 inch grid R mark, or equivalent.

R B. Moisture Meter

R (1) All purpose meter with 4-position sensitivity switch, R meter is available from Data Tech-Moisture Resister R Products, A Penril Company, 3110 W. Segerstrom Ave., R Santa Ana, Ca. 92704, or equivalent. (2) 6 inch X 4 R inch clear plastic template with 1 inch grid marks or R equivalent.

R C. In-Situ Balance

R (1) Preferred Method

(a) Weighing equipment - one compression load cell with accuracy of ±1 lb. and minimum operating range of 100 lbs.

(b) Jackscrew tripod

(c) Protective pad.

(d) "V" Block

(e) Inclinometer, or equivalent

(2) Alternate Method

(a) Weighing equipment - platform type scale with minimum operating range of 100 lbs.

(b) 2 1/2-inch diameter steel pole (length as required), or equivalent

(c) Protective pad

(d) Shims (to support steel pole)

(e) Inclinometer, or equivalent

(f) Plumb-bob

3. Referenced Procedure

6-40-00	Exterior Access Doors and Removable Panels - Description and Operation
12-23-15	Elevator and Horizontal - Stablilizer - Servicing
27-31-03	Elevator - Removal/Installation
27-31-07	Elevator Surface - Damper - Servicing
29-11-00	Hydraulic Power System - Maintenance Practice
55-21-80	Nondestructive Testing Manual - Elevator Trailing Edge Honeycomb Wedge
51-50-07	Structural Repair Manual - Inspection Techniques
51-90-00	Structural Repair Manual - Control Surface Mass Balance/Repair

R 4. Inspection/Check

R A. Preparation

R (1) Ensure that hydraulic power is off on all four
R hydraulic systems (Ref. MM 29-11-00).

R (2) Placard Flight Engineer/Second Officers Hydraulic
R Systems panel and Hydraulic Service Center servicing
R panel with MAINTENANCE-IN-PROGRESS tag.

R (3) In flight station, install control column lock.

R (4) Inspect elevator damper for proper fluid level. If oil
R is low, service damper in accordance with MM 27-31-07.

R B. X-Ray Inspection

R WARNING: OBSERVE ALL PRECAUTIONS TO PERSONNEL AND EQUIPMENT
R WHEN USING X-RAY EQUIPMENT.

R (1) X-ray entire span of trailing edge panel in accordance
R with Nondestructive Testing Manual 55-21-80.

R (2) Review processed flim.

R (3) Determine location and amount of water.

R (a) Use a 6 inch X 4 inch clear plastic template with
R 1-inch grid marks or other measuring device.

R (b) Place measuring device over area of trailing edge
R radiograph displaying areas containing water. For
R each trailing edge segment (inboard and outboard),
R (Ref. Fig. 601), estimate total area of core that
R contains water.

R (4) Proceed to Paragraph 4F for entrapped water
R calculation.

R C. Moisture Meter Check

R (1) Standardizing the Moisture Meter

R (a) Set STANDARD switch on Moisture Meter to OUT
R position.

R (b) Set MOISTURE RANGE switch on Moisture meter on
R number 3 setting.

R (c) Hold in switch Moisture Meter handle and turn
R ADJUSTMENT knob to zero.

R NOTE: If meter needle indicates a setting of 50
R (plus or minus 2 divisions), the meter has
R been standardized and is properly
R functioning.

R If the Moisture Meter fails to indicate
R this setting, the Moisture Meter should be
R returned to the manufacturer for repair.

R (d) Turn Moisture Meter STANDARD switch to OUT
R position.

R (2) Inspect trailing edge assembly with Moisture Meter as
R follows:

R (a) Hold Moisture Meter handle switch in and firmly
R seat electrodes against bottom surface of trailing
R edge assembly.

R (b) Continue to hold handle switch in and slide
R Moisture Meter across and along the entire bottom
R surface of trailing edge.

R NOTE: The Moisture Meter electrodes must remain
R firmly seated against the trailing edge
R surface during all scanning operations.

R (c) Mark all areas where Moisture Meter scale exceeds
R 45 units. These areas should be considered to
R contain entrapped water.

R (d) Determine location and amount of entrapped water:

R • Use 6 inch X 4 inch clear plastic template
R with 1 inch grid marks or another measuring
R device.

R • Place measuring device over each area on
R Trailing Edge assembly where entrapped water
R is indicated.

R • Estimate total area of each segment of
R Trailing Edge assembly core that contains
R water.

R (3) Proceed to Paragraph 4F for entrapped water
R calculation.

R D. In-Situ Balance Check - Preferred Method (For Alternate
R Method, Refer to Paragraph 4E)

R NOTE: Aircraft must be inside hangar with doors closed to
R shield it from any winds, with no one on or in the
R aircraft and with the aircraft completely dormant and
R undisturbed while taking data. If necessary to
R measure both sides, take measurements on each side
R separately.

R (1) Remove upper elevator seals (approximately 130 screws).

R (2) Open all lower access panels, (Ref. MM 6-40-00) (This
R eleminates friction of lower seals).

R (3) Remove dampers from elevators so equipped. Lubricate
R all eight hinge bearings (Ref. MM 12-23-15). (If this
R is done while opening the lower access panels it can
R reduce time involved by limiting number of times to
R move the stand).

R (4) Position stand or equivalent just below the elevator
R trailing edge at mid-span to support elevator prior to
R completing the next step. Stand should contact
R elevator at junction of rear beam and any chordwise
R rib.

R CAUTION: DO NOT ALLOW ELEVATOR MOVEMENT WHICH COULD PERMIT
R THE BALANCE WEIGHTS OR THE ELEVATOR LOWER LEADING
R EDGE TO CONTACT STABILIZER STRUCTURE AND RESULT IN
R DAMAGE. PREVENT THE STAND FROM SCRATCHING OR
R DENTING THE ELEVATOR BY PLACING A CUSHION DEVICE
R AT THE ELEVATOR CONTACT POINT.

R (5) Disconnect elevator drive push rod at elevator. Secure
R rod so that it will not bind or hang up while moving
R elevator. IT MAY BE NECESSARY TO DISCONNECT PUSH ROD
R STABILIZING ROD.

R (6) Assure that elevator moves smoothly and freely without
R binding by manually cycling it several times to work
R lubricated hinges. Move elevator trailing edge up by
R hand approximately 8 inches then lower it to the stand
R used in Step 4D(4).

R (7) Using most rigid stand available position it under
R elevator at point "A" as shown in Figure 602.

R (8) Position mechanical screw jack under Point "A", Figure
R 602. Hold protective pad on the elevator at Point "A"
R and position load cell between the pad and screw jack.
R Using plumb bob, assure that jack stand and load cell
R are aligned vertically.

R (9) Using inclinometer on smooth part of upper surface of elevator, parallel to fore and aft line of rivets, adjust screw jack until upper surface of elevator is at a 6 degree (± 1 degree) angle declining aftward, reference Figure 602 (Sheet 2).

R (10) Reposition stand from Step 4D(4) vertically until padding clears elevator by one inch ± 1/2 inch.

R (11) Move the screw jack up by turning nut until the screw advances 0.5 inch but not more than 0.75 inch.

R (12) Record load cell reading.

R (13) Reverse Step 4D(11) procedure by turning screw jack nut in the opposite direction same number of turns.

R (14) Record load cell reading.

R (15) Repeat Steps 4D(11), 4D(12), 4D(13) and 4D(14) four more times.

R (16) Proceed to Paragraph 4G for entrapped water calculation.

R E. In-Situ Balance Check Alternate Method

R CAUTION: STEEL POLE MUST BE VERTICAL ON PLATFORM SCALE TO PREVENT SIDE LOAD, CAUSING LOWER THAN ACTUAL READINGS DUE TO PLATFORM BINDING.

R NOTE: Aircraft must be inside hangar with doors closed to shield it from any winds, with no one on or in the aircraft and with the aircraft completely dormant and undisturbed while taking data. If necessary to measure both sides, take measurements on each side separately.

R (1) Prepare elevator same as in Paragraph 4D, Steps 4D(1) through 4D(6).

R (2) With use of plumb-bob, line up center of platform type scale on floor with Point "A" on elevator (Ref. Fig. 602, Sheet 2, View C).

R (3) Using protective pad between elevator and a pole, set up pole (2-1/4-inch dia. min.) on scale with shims between the pole and scale. Using inclinomete, adjust the shimming so that upper surface of elevator is at a 6° ± 1° angle declining aftward (Ref. Fig. 602, Sheet 2, View C).

R (4) With use of plumb-bob, ensure pole is vertical and in
R line with Point "A". Identify locations of upper and
R lower contacts of pole.

R (5) Keeping pad in place, raise elevator and pad clear of
R pole, then lower the elevator so that pad rests on top
R of pole at Point "A".

R (6) Record scale reading.

R (7) Repeat Steps 4E(5) and 4E(6) nine more times.

R (8) Proceed to Paragraph 4G. for entrapped water
R calculation.

R F. Entrapped Water Calculation For X-ray and Moisture Meter
R Inspection/Check

R (1) Calculate amount of resulting unbalance by multiplying
R water area determined above by appropriate unbalance
R factor for each segment (Ref. Fig. 601).

R (a) Estimate Unbalance for segment (in lbs.) = Water
R Area (Square inches) X Unbalance Factor (in lb.
R per square inch water area).

R (b) Sum these values to obtain total unbalance due to
R water. Note "actual" unbalance shown on
R identification plate and add this value to
R calculated water unbalance to obtain total
R elevator unbalance.

R (2) If total elevator unbalance is within allowable limits
R specified in Structural Repair Manual 51-90-00, or can
R be brought within allowable limit by addition of
R available incremental counterbalance weights as per SRM
R 51-90-00, proceed to Step 4F(4).

R (3) If total elevator unbalance is not within allowable
R limits and cannot be brought within limits by addition
R of incremental counterbalance weights, then trailing
R edge panel(s) must be replaced.

R NOTE: Installation of an inboard trailing edge
R weighing more than 14 pounds or an outboard
R trailing edge weighing more than 28 pounds
R including paint and static dischargers may
R result in balancing difficulty due to
R incremental balance weight limits (Ref. SRM
R 51-90-00). Before installing a panel exceeding
R weight limits, available unbalance capability
R should be checked.

R (4) Remove tags installed in Step 4A(2).

R (5) Remove control column lock installed in Step 4A(3).

R G. Entrapped Water Calculation For In-Situ Balance Check

R (1) Multiply each recorded reading less tare weight by 49.8
R inches to compute moment, then average the 10 moments.
R This average moment represents total elevator
R unbalance.

R (2) If total elevator unbalance is within the allowable
R limits specified in Structural Repair Manual Section
R 51-90-00, or is brought within allowable limits by
R addition of available incremental conterbalance weights
R as per SRM 51-90-00, proceed to Step 4G(4).

R (3) If total elevator unbalance is not within allowable
R limits and cannot be brought within limits by addition
R of incremental counterbalance weights, then trailing
R edge panel(s) must be replaced.

R NOTE: Installation of an inboard trailing edge
R weighing more than 14 pounds or an outboard
R trailing edge weighing more than 28 pounds
R including paint and static dischargers may
R result in balancing difficulty due to
R incremental balance weight limits (Ref. SRM
R 51-90-00). Before installing a panel exceeding
R these weight limits available unbalance
R capability should be checked.

R (4) Remove scale and equipment.

R (5) Reinstall elevator dampers, (Ref. MM 27-31-07).

R (6) Remove tags and control column lock installed in Step
R 4A(2).

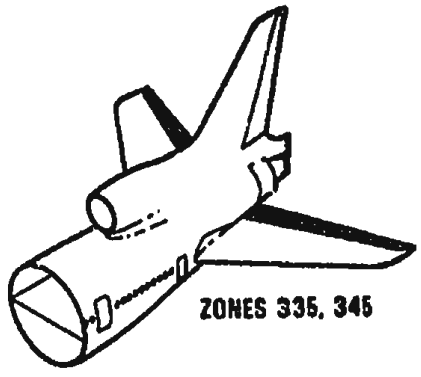
R (7) Reinstall and check elevator actuation pushrod
R adjustment, (Ref. MM 27-31-03).

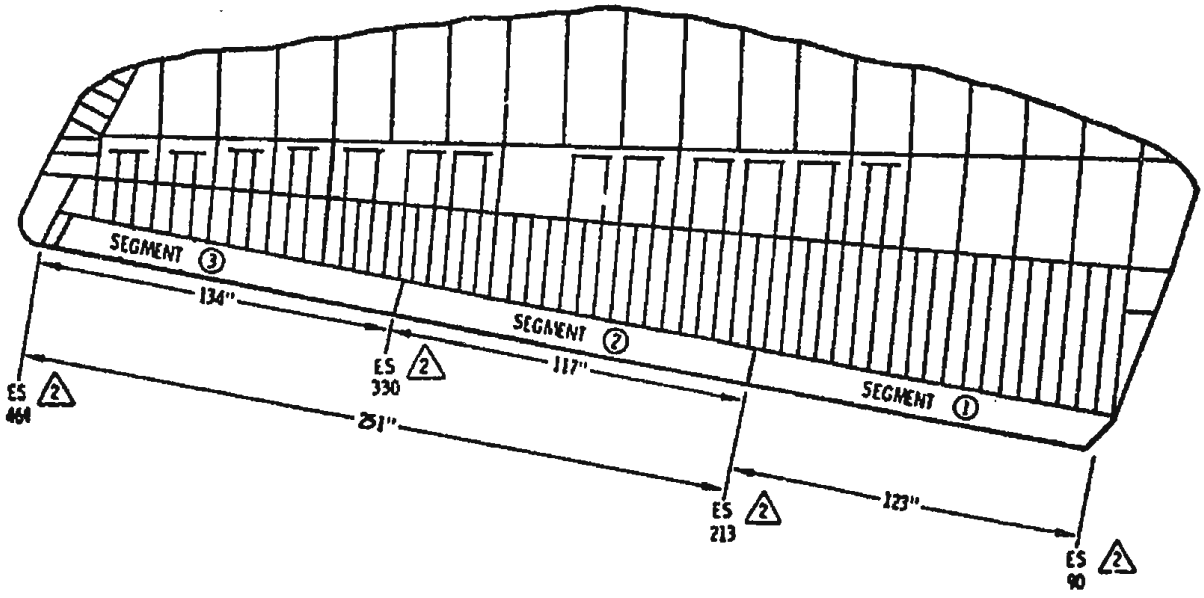
R (8) Perform operational check of elevator in accordance
R with MM 27-31-03.

R (9) Reinstall elevator upper seals, (Ref. MM 27-31-03).

R (10) Close all lower access doors of elevator, (Ref. MM
R 6-40-00).

R (11) Return Aircraft to service.





ELEVATOR TRAILING EDGE STRUCTURE

SEGMENT	UNBALANCE FACTOR 1
1	1.70
2	1.25
3	0.80

NOTE

1 IN.-LB UNBALANCE PER SQUARE INCH WATER AREA

2 ES INDICATES ELEVATOR

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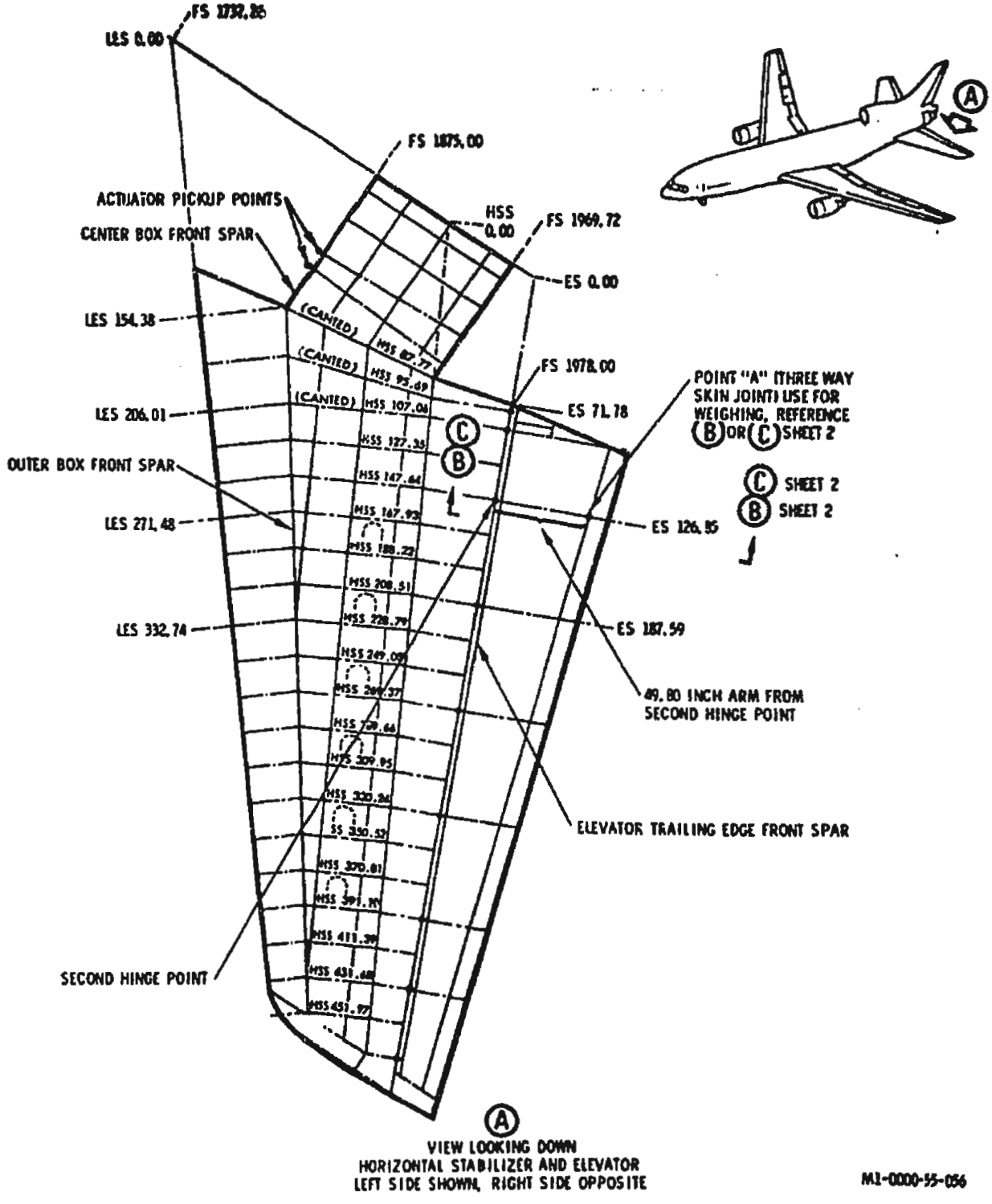
R Elevator Trailing Edge Segments for Unbalancing Factor
R Figure 601

R EFFECTIVITY: ALL
R
001B



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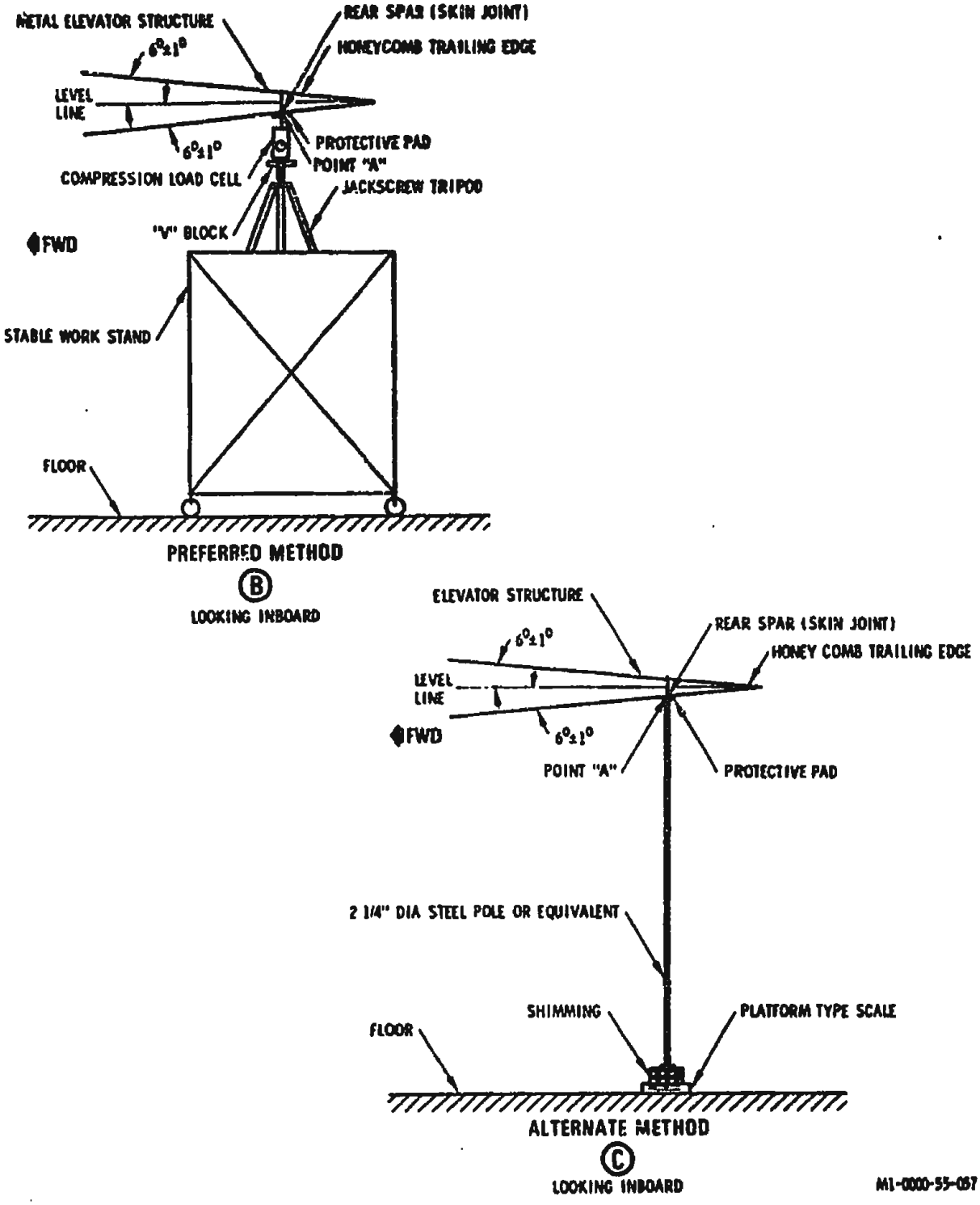
R In-Situ Elevator Balancing
R Figure 602 (Sheet 1)

R EFFECTIVITY: ALL
R
001B



R In-Situ Elevator Balancing
R Figure 602 (Sheet 2)

R EFFECTIVITY: ALL
R
001B

R

ELEVATOR TIP - REMOVAL AND INSTALLATION

R 1. General

R This removal and installation procedure applies to the left and
R right elevator tip assemblies, which are installed between the
R elevator closure rib and tip support structure on either side of
R the elevator.

R 2. Equipment and Materials

R Sealing Compound, LAC Spec LCM40-775, or equivalent

R Sealing Compound, LAC Spec LCM40-2121A, or equivalent

R 3. Referenced Procedures

R 29-11-00 Hydraulic Power System - Maintenance Practices

R PB75-425 Environmental Sealing of Model L-1011 Airplane

R 4. Removal/Installation

R WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF
R (REF. 29-11-01). TAG FLIGHT ENGINEER/SECOND OFFICERS
R HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC
R SERVICE PANEL, ZONE 147.

R A. Removal

R (1) Remove screws attaching elevator tip, 335D, to elevator
R structure (Ref. Fig. 401).

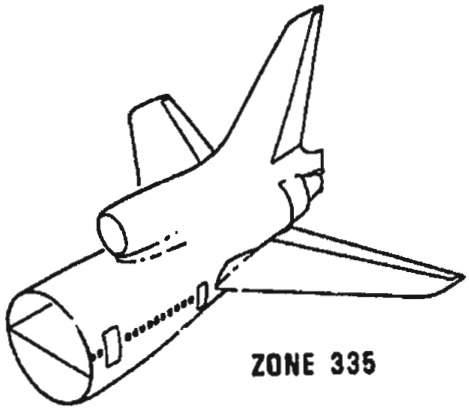
R (2) Disconnect bonding jumpers by removing attaching bolts,
R washers, and nuts.

R (3) Stow tip in protected area (as required).

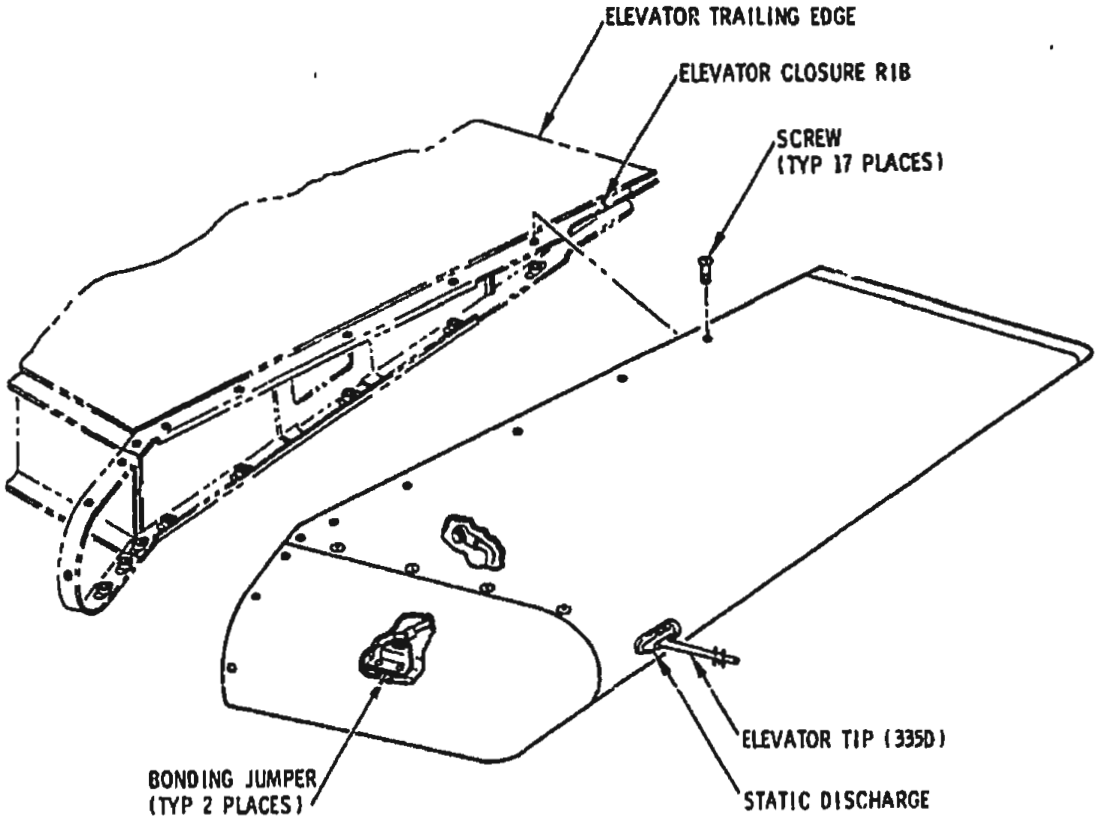
R B. Installation

R (1) Hold elevator tip near elevator closure rib and tip
R support structure. Connect bonding jumpers by
R installing attaching bolts, washers, and nuts.

R (2) After assembly, brush-seal bonding jumpers and ground
R connections with LCM40-775 sealing compound, or



ZONE 335



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R Elevator Tip - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
050

R equivalent, in accordance with LAC Process Bulletin
R PB75-425.

R (3) Apply LCM40-2121A sealing compound, or equivalent, to
R each screw in accordance with LAC Process Bulletin
R PB75-425.

R (4) Wet-install screws attaching elevator tip, 335D, to
R elevator structure.

PLATES AND SKINS - DESCRIPTION AND OPERATION

1. General

The 7075-T6 clad aluminum elevator skins have bonded doublers on the interior surfaces at all attachment points. Each of the upper and lower elevator surfaces has five separate skin panels.

CR

ELEVATOR - MAINTENANCE PRACTICES

CR 1. Elevator Trailing Edge Inboard Section Replacement

CR A. Due to the various L-1011 elevator trailing edge configuration and installation requirements, some confusion has resulted during replacement. The following information has been compiled to provide assistance during an elevator Trailing Edge (TE) Inboard (INBD) section replacement.

CR (1) Three configurations of TE-INBD sections exist:

CR (a) Manufacturer P/N 1524093-241 or -265. This section was installed on the first 22 aircraft and is the one that occasionally required replacement.

CR (b) Manufacturer P/N 1524093-289. This section is the -241 or -265 which has had the aft edge reinforced with 3 layers of fiberglass (M.O. 98336).

CR (c) Manufacturer P/N 1580585-103. This is the latest configuration and is a honeycomb assembly. All new replacement TE's will be of this type. This part is distinguishable from the others by its solid construction, no rivets along the aft edge, and the integral fiberglass closure rib at the INBD edge.

CR (2) Installation requirements for each TE:

CR (a) Manufacturer P/N 1524093-241 or -265. No longer available as a spare. If it becomes necessary to rob this type of TE from one aircraft to use on another, no special requirements exist except that the attach holes may not line up with the elevator holes. It may be advisable, if this is the case, to fill in the misaligned holes with 4-part mix and redrill as necessary.

CR (b) Manufacturer P/N 1524093-289. Not normally available as a spare. If one is used, the same interchangeability problem may exist as for the -241/-265 TE. This part will be identifiable by the thicker aft edge. Eventually, all installed -241/-265 TE's will be modified to the -289 configuration.

CR 1) When installing a -289 in place of an unmodified -241/-265 TE the elevator must be rebalanced as follows:

C a) Locate elevator identity plate and note
C unbalance moment marked on plate. Add (+) 151
C in. lb. (the nominal unbalance increase with a
C -289) to this moment.

C b) Subtract 1800 in. lb. from the total
C moment calculated in Step (a). This will give
C the minimum amount of unbalance moment that
C must be counterbalanced by the addition of
C weights.

C c) Figure 1 shows the number and location of
C additional weights needed to counterbalance
C moments from 4.6 to 150.3 in. lbs.

C d) After adding the required counterbalance
C (ref. SRM 51-90-00) weights, determine the
C final unbalance moment by subtracting the
C total moment of the added weights from the
C total moment from Step (a).

C e) Mark this value on the elevator identity
C plate using a metal stamp. Disfigure the
C numbers that no longer apply.

C 2) Locate the -289 TE on the elevator rear spar
C with a .10 inch gap from the adjacent -189 TE
C section. The -277 closure rib is then located by
C the clip on the INBD end of the rear spar. Trim
C the -289 along the rib edge.

C (c) Manufacturer P/N 1580585-103. This honeycomb TE
C will be installed on aircraft 11026 and on and is
C the preferred spare for all aircraft:

C 1) When a -103 is used to replace a -241/-265
C rebalancing should not be necessary. The
C reduction in unbalance is (-) 122 in. lb.
C Subtract this figure from the existing data plate
C unbalance figure and stamp the new figure on the
C plate. Disfigure the number that no longer
C applies.

C 2) When a -103 is used to replace a -289
C rebalancing may be necessary. The reduction in
C unbalance is (-) 273 in. lbs. Subtract this
CR figure from the existing data plate unbalance
C figure. Any removed weights and mounting plates
C should be credited into Special Projects under
C M.O. 98336. Stamp the final unbalance figure,
C after all rebalancing has been completed, on the
C data plate. Disfigure the old unbalance numbers.

C 3) If a -289 is being replaced by a -103 and the
C data plate had not been changed at the time of the
C -289 installation, the elevator was probably not
C rebalanced. In this case rebalancing may not be
C necessary but the data plate must be changed to
C reflect the -103 installation. Subtract 122 in.
C lbs. from existing numbers, stamp new figure on
C plate and disfigure old numbers.

C 4) The -103 does not incorporate a separate
C closure rib as do the earlier TE assemblies. The
C -103 is finish trimmed so there should be no need
C to trim at installation. Both the -277 closure
C rib and -283 clip are deleted when installing a
C honeycomb TE.

C 5) Approximately .50 inch clearance should exist
C between the elevator rear spar and the concave
C face of the -103 TE.

REQUIRED UNBALANCE ADJUSTMENT	ADDITIONAL INCREMENTAL WEIGHTS REQD. PER BAY													*TOTAL NO. WEIGHTS ADDED
	A	B	C	D	E	F	G	J	K	L	M	N	P	
-4.8 (IN-LB)							1							1
-8.6						1	1							2
-14.2						1	1	1						3
-18.0					1	1	1	1						4
-23.8					1	1	1	1	1					5
-27.1				1	1	1	1	1	1					6
-33.0				1	1	1	1	1	1	1				7
-36.3			1	1	1	1	1	1	1	1				8
-43.0			1	1	1	1	1	1	1	1	1			9
-45.7		1	1	1	1	1	1	1	1	1	1			10
-52.5		1	1	1	1	1	1	1	1	1	1	1		11
-54.9	1	1	1	1	1	1	1	1	1	1	1	1		12
-62.0	1	1	1	1	1	1	1	1	1	1	1	1	1	13
-66.8	1	1	1	1	1	1	2	1	1	1	1	1	1	14
-70.6	1	1	1	1	1	2	2	1	1	1	1	1	1	15
-76.1	1	1	1	1	1	2	2	2	1	1	1	1	1	16
-79.8	1	1	1	1	2	2	2	2	1	1	1	1	1	17
-85.6	1	1	1	1	2	2	2	2	2	1	1	1	1	18
-88.8	1	1	1	2	2	2	2	2	2	1	1	1	1	19
-94.7	1	1	1	2	2	2	2	2	2	2	1	1	1	20
-98.0	1	1	2	2	2	2	2	2	2	2	1	1	1	21
-104.6	1	1	2	2	2	2	2	2	2	2	2	1	1	22
-107.3	1	2	2	2	2	2	2	2	2	2	2	1	1	23
-114.0	1	2	2	2	2	2	2	2	2	2	2	2	1	24
-116.4	2	2	2	2	2	2	2	2	2	2	2	2	1	25
-123.5	2	2	2	2	2	2	2	2	2	2	2	2	2	26
-128.0	2	2	2	2	2	2	3	2	2	2	2	2	2	27
-132.0	2	2	2	2	2	3	3	2	2	2	2	2	2	28
-137.6	2	2	2	2	2	3	3	3	2	2	2	2	2	29
-141.3	2	2	2	2	3	3	3	3	2	2	2	2	2	30
-147.0	2	2	2	2	3	3	3	3	3	2	2	2	2	31
-150.3	2	2	2	3	3	3	3	3	3	2	2	2	2	32

*EACH INCREMENTAL WEIGHT WEIGHS 0.25 POUND.

NOTE

ADD WEIGHTS IN THE BAYS (SHOWN BY THE LETTERS) ACCORDING TO THE REQUIRED ADJUSTMENT. REMOVE WEIGHTS IN THE SAME SEQUENCE IF LESS WEIGHTS ARE REQUIRED. REFER TO SRM CHAPTER/SECTION 51-90-00.

IF ADDITIONAL WEIGHTS ARE REQUIRED, THEY CAN BE OBTAINED FROM SPECIAL PROJECTS UNDER MO 98336, MFR. P/N 1524841-101.

M1-5000-55-044

CR
CR

Weight Adjustment Chart
Figure 1

R EFFECTIVITY: ALL
R
001B

VERTICAL STABILIZER - DESCRIPTION AND OPERATION

1. General

The vertical stabilizer has a two-spar main frame box structure, a removable leading edge, and a trailing edge of fixed and hinged panels. These panels fair the box structure to the rudder and provide access to the rudder hinge fittings.

MAIN FRAME - DESCRIPTION AND OPERATION

1. General

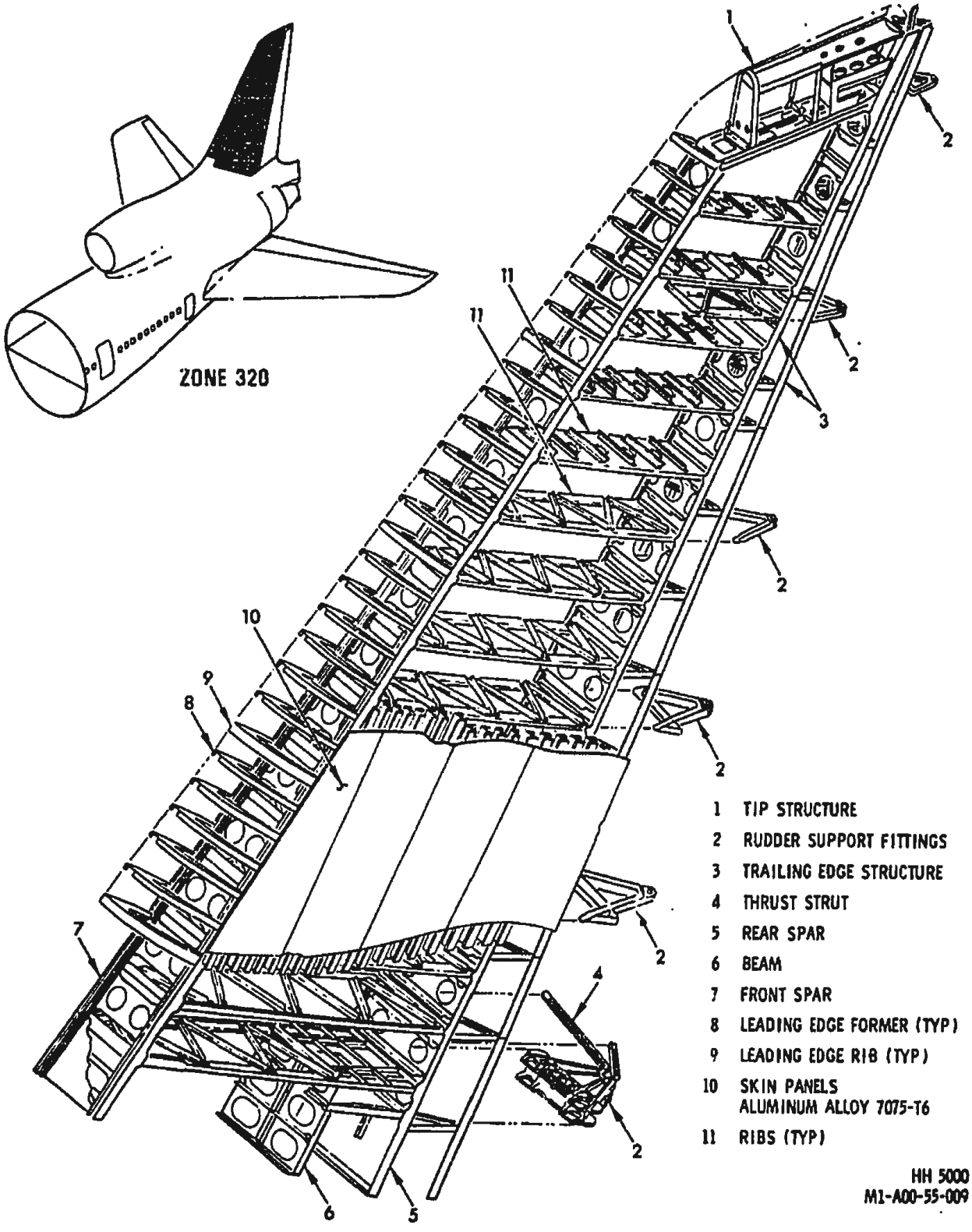
The vertical stabilizer main frame (Ref. Fig. 1) includes front and rear spars, a beam, ribs, and stringer-reinforced skin panels. The main frame has a chord of 107 inches and a thickness of 21 inches at the lower end. The vertical stabilizer tapers to a chord of 51 inches and a thickness of 10 inches at the top.

The front and rear spars have extruded spar caps, sheet metal webs and extruded stiffeners.

A short beam at FS 2015.6 extends to the rib at vertical stabilizer station (VSS) 97.19.

All ribs up to and including VSS 248.55 are truss type ribs that are built up from extruded 7075-T6 aluminum alloy members. Ribs above VSS 248.55 are constructed of pressed 7075-T6 sheet aluminum with dished lightening holes and extruded aluminum stiffeners. A short stub rib at VSS 90.19 extends aft of the auxiliary spar to the rear spar.

Stringers made of 7075-T6 aluminum alloy are located parallel the rear spar. The stringers are primarily Z-cross sections, however, T-sections are used to provide the support for skin attachment at the skin panel butt splices.



Vertical Stabilizer Structure
Figure 1

LEADING EDGE STRUCTURE - DESCRIPTION AND OPERATION

1. General

The vertical stabilizer leading edge (Ref. 55-31-00, Fig. 1) is made of conventionally formed sheet metal and rib construction. Padded areas on the skin along the leading edge minimize hail damage. Padded areas along rivet and screw patterns prevent fatigue cracks. The leading edge consists of four removable sections. Each section is approximately 5 feet long.

Joint ribs have one-piece extruded cap strips formed to nose contours. These ribs have sheet metal webs fastened to the inner cap leg. Intermediate ribs are full-contoured and press-formed with flanges and lightening holes. All ribs are made of 7075-T6 aluminum alloy sheet.

TRAILING EDGE STRUCTURE - DESCRIPTION AND OPERATION

1. General

The vertical stabilizer trailing edge structure (Ref. 55-31-00, Fig. 1) provides a faired surface between the box structure rear spar and the rudder leading edge. The structure has panel assemblies supported from the rear spar by a series of fixed, truss-type braces next to the rudder hinges.

Seven hinge fittings attached to the rear spar support the rudder along its full length. Two of the hinge fittings provide integral support for the flutter damper cylinders. A separate support is provided for the upper flutter damper. The lower two hinges support the trunnion-mounted actuators positioned between the two hinges.

The trailing edge panels consist of fiber glass skins bonded to beaded, fiber glass inner skins. An extruded J-section is riveted along the aft edge of each panel. Sections of panel covering the rudder hinge supports are hinged along the rear spar and attached to the trailing edge trusses with removable fasteners, providing access to rudder hinges, actuators and controls. All trailing edge doors have hold-open mechanisms.

TIP STRUCTURE - DESCRIPTION AND OPERATION

1. General

The vertical stabilizer tip structure (Ref. 55-31-00, Fig. 1) has two sections; the forward section is made of aluminum alloy, and the aft section, which covers the VOR antenna, is made of fiber glass. A grounded metal strip along the aft section provides lightning protection for the antenna.

PLATES AND SKINS - DESCRIPTION AND OPERATION

1. General

The vertical stabilizer main frame is covered with chem-mill tapered and contoured 7075-T6 aluminum alloy clad panels. Four separate panels are used on each of the upper surfaces.

VERTICAL STABILIZER LEADING EDGE PANELS REMOVAL AND INSTALLATION

1. General

This removal and installation procedure applies to each of the four vertical stabilizer leading edge panels. Each panel can be removed or installed independently of adjacent panels.

2. Equipment and Materials

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

3. Referenced Procedures

29-11-00	Hydraulic Power System - Maintenance Practices
PB75-425	Environmental Sealing of Model L-1011 Airplane

4. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

A. Removal

R R (1) Remove bolts attaching each panel upper, lower, and vertical edges to vertical stabilizer leading edge rib (Ref. Fig. 401).

(2) Stow panel in protected area (as required).

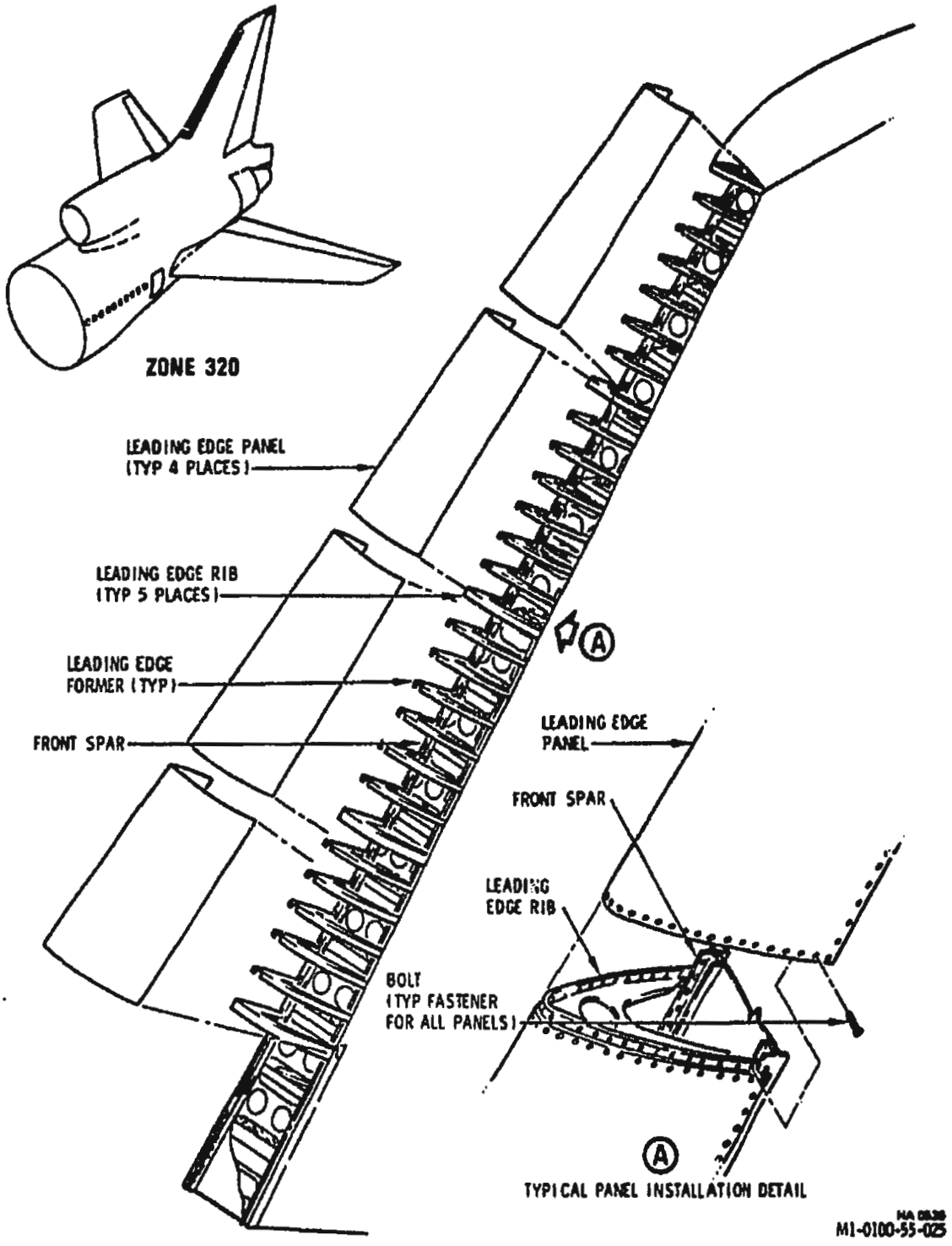
B. Installation

(1) Apply sealing compound to each bolt in accordance with LAC Process Bulletin PB75-425.

(2) Hold panel in position against vertical stabilizer leading edge ribs.

R R (3) Wet-install bolts in each panel upper, lower, and vertical edges.

(4) Torque all bolts to 25 (±5) lb in.



Vertical Stabilizer Leading Edge Panels
Removal and Installation
Figure 401

(5) Remove warning tags installed at beginning of Paragraph 4.

VERTICAL STABILIZER TIP - REMOVAL AND INSTALLATION

1. General

The vertical stabilizer tip is a removable section of the vertical stabilizer upper leading edge.

2. Equipment and Materials

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

Sealing Compound, LAC Spec LCM40-775, or equivalent

Antichafing Compound, LAC Spec LCM40-1218, Type II, or equivalent

Mold Release Compound, Specialty Products Co., Resin Release N, or equivalent

Talc, Purified U.S.P. Grade 200 Mesh, or equivalent

3. Referenced Procedures

29-11-00	Hydraulic Power System - Maintenance Practices
PB75-425	Environmental Sealing of Model L-1011 Airplane
LCP78-1080	Antichafing Protection of Structure

4. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

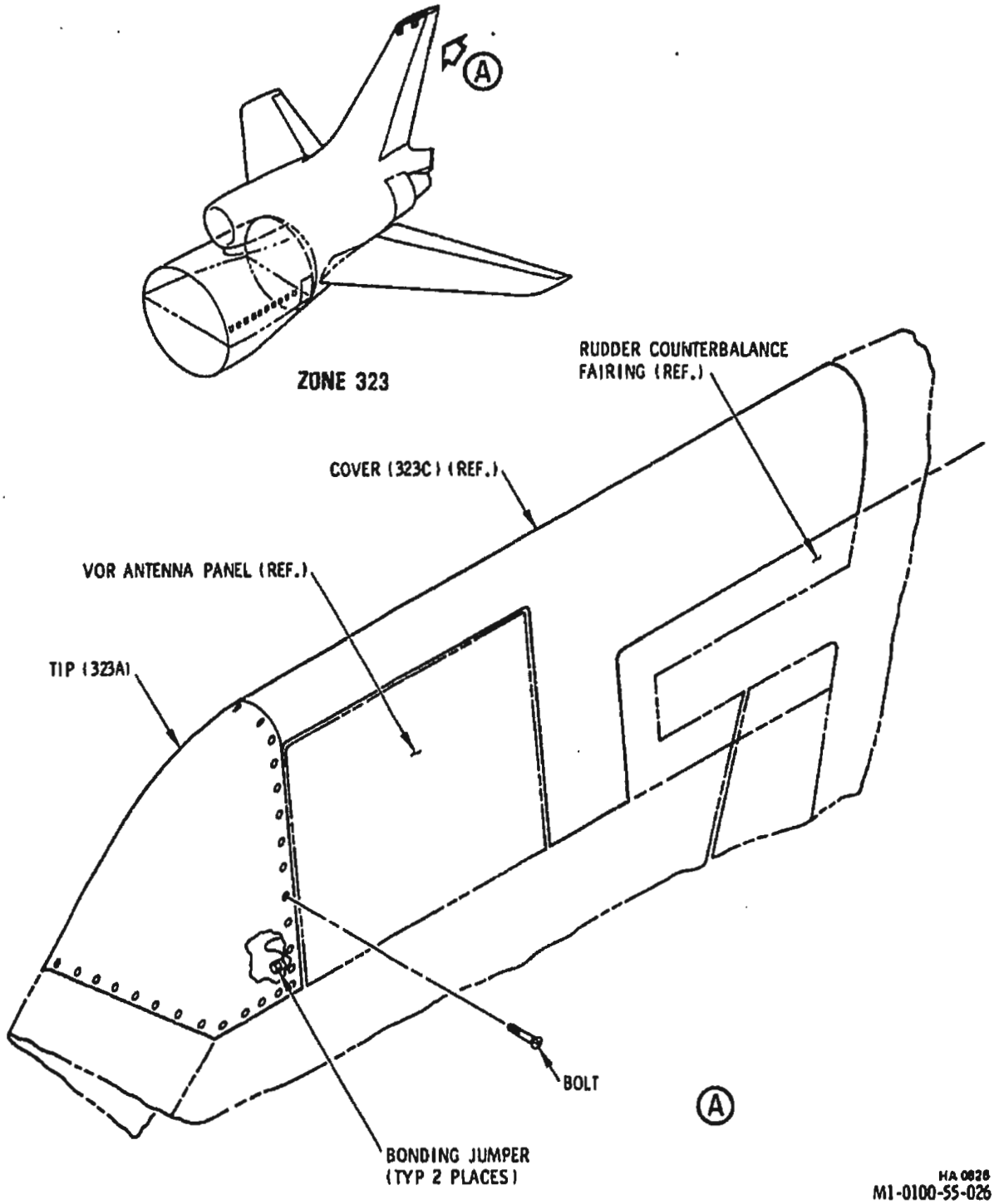
A. Removal

(1) Remove bolts attaching tip to vertical stabilizer structure (Ref. Fig. 401).

(2) Disconnect bonding jumper by removing attaching bolt, washers, and nut.

(3) Stow tip in protected area.

B. Installation



Vertical Stabilizer Tip - Removal and Installation
Figure 401

(1) Examine faying surfaces of vertical stabilizer tip assembly and fixed support structure to which it attaches.

(2) Check condition of existing antichafing compound on support structure. Replace, as necessary, to a thickness of 0.010 to 0.020-inch, in accordance with LCP78-1080.

(3) Apply talc and mold release compound (Ref. LCP78-1080).

(4) Hold tip near vertical stabilizer structure and connect bonding jumper by installing attaching bolt, washers, and nut.

(5) After assembly, brush-seal bonding jumper and ground connection with LCM40-775, or equivalent, sealing compound in accordance with PB75-425.

(6) Apply LCM40-2121A, or equivalent, sealing compound to each bolt, in accordance with PB75-425.

(7) Wet-install bolts attaching tip to vertical stabilizer structure.

(8) Remove tags installed at beginning of Paragraph 4.

VERTICAL STABILIZER TRAILING EDGE ASSEMBLIES REMOVAL AND INSTALLATION

1. General

This removal and installation procedure applies to the removable and hinge-attached panels which provide access to the rudder hinge fittings, actuators, and controls. These panels are located along the trailing edge of the vertical stabilizer.

2. Equipment and Materials

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

3. Reference Procedures

29-11-00 Hydraulic Power System - Maintenance Practices

R 20-51-04 Environmental SEaling - Maintenance Practices

4. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

A. Removal

(1) Hinged Panel

(a) Unscrew captive screws on panel upper and lower edges (Ref. Fig. 401).

(b) Remove screws attaching panel leading edge to hinge.

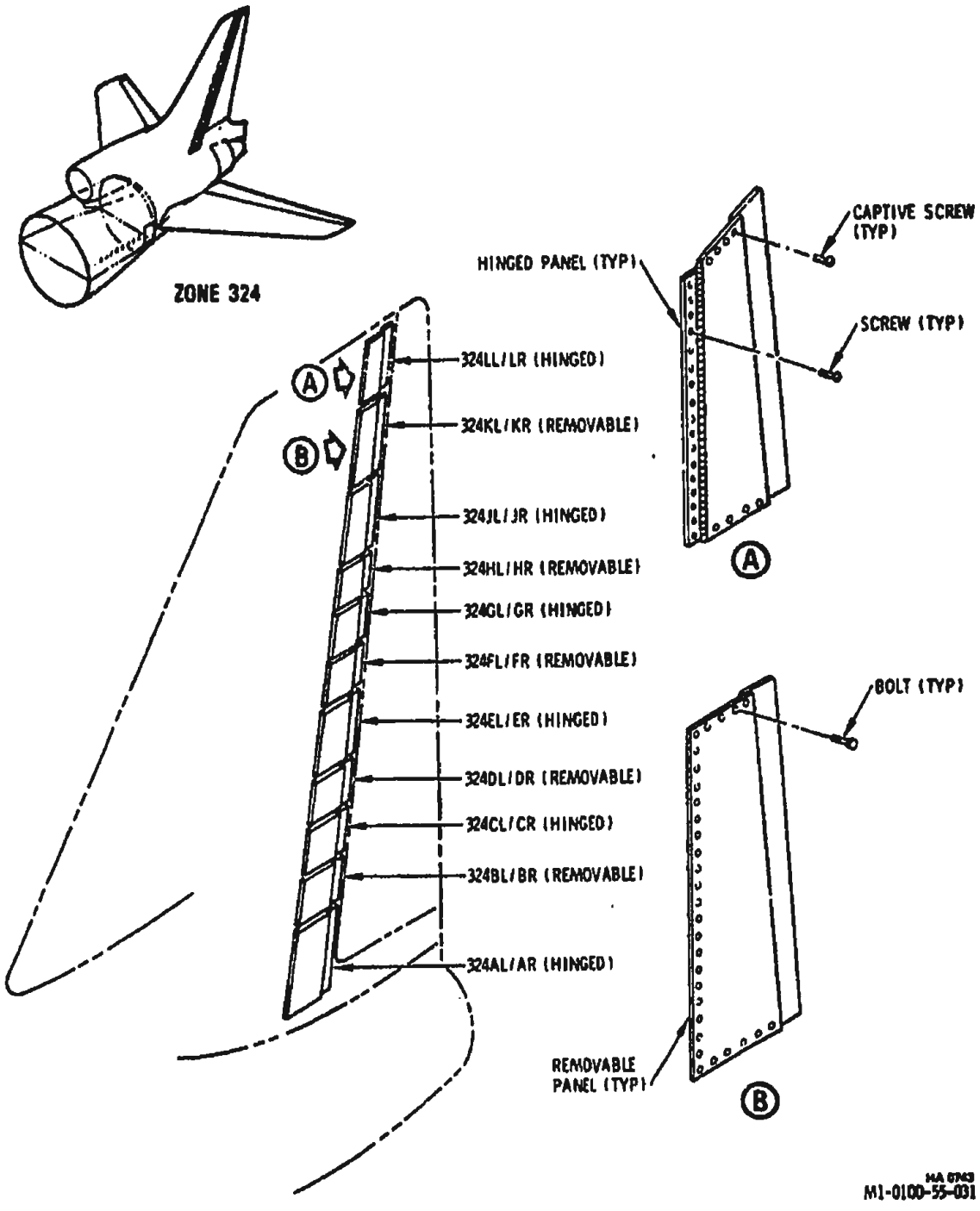
(c) Stow panel in protected area.

(2) Removable Panel

(a) Remove bolts attaching panel to vertical stabilizer support structure on three edges.

(b) Stow panel in protected area.

B. Installation



Vertical Stabilizer Trailing Edge Assemblies
Removal and Installation
Figure 401

(1) Hinged Panel

R
R (a) Apply sealing compound to each hinge screw (Ref. 20-51-04).

(b) Wet-install screws attaching panel leading edge to hinge.

(c) Drive captive screws on panel upper and lower edges.

(2) Removable Panel

R
R (a) Apply sealing compound to each bolt (Ref. 20-51-04).

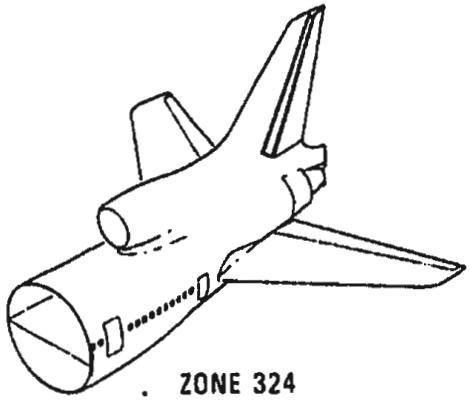
(b) Wet-install bolts attaching panel to vertical stabilizer support structure on three edges.

(3) Remove warning tags installed at the beginning of Paragraph 4.

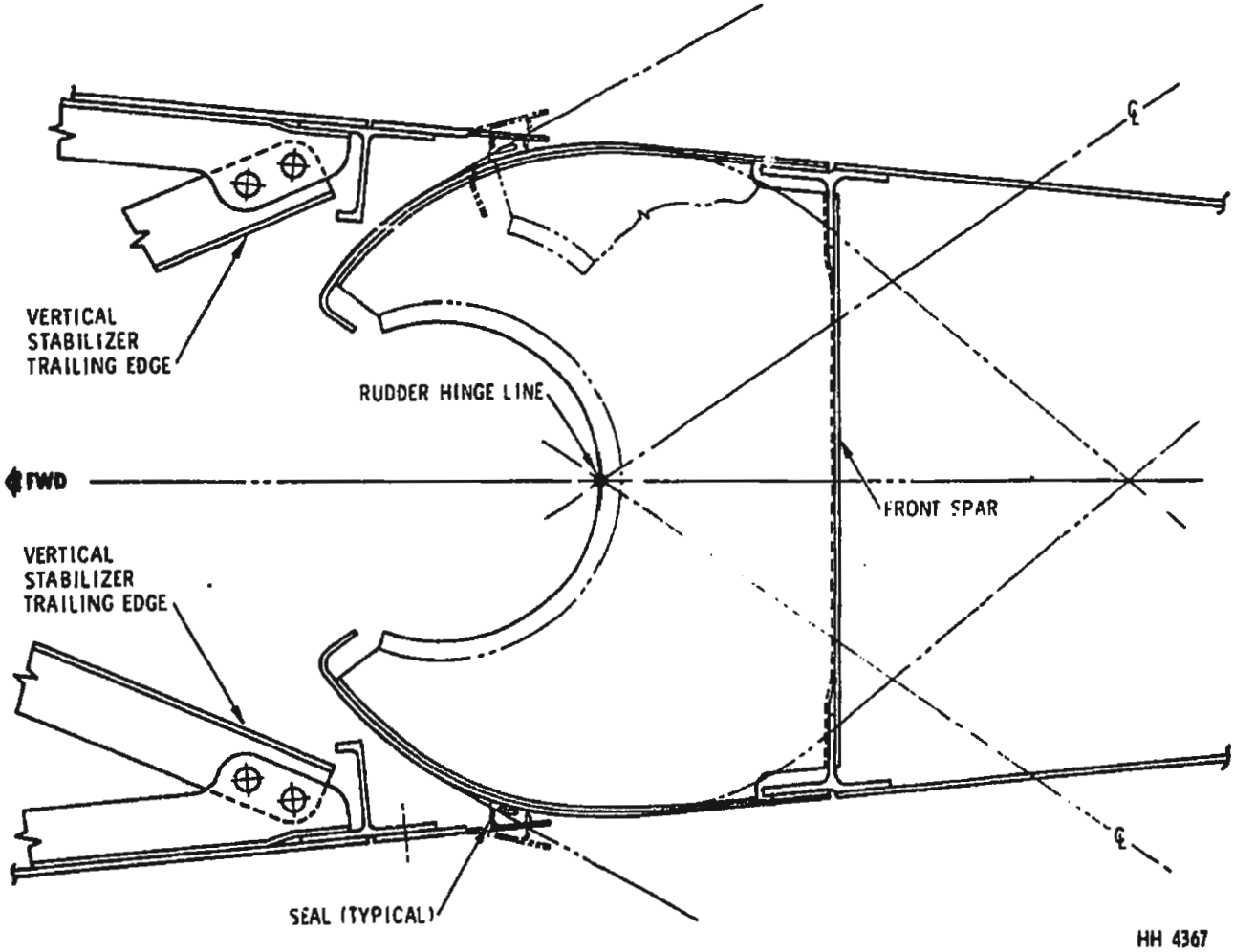
AERODYNAMIC SEALS - DESCRIPTION AND OPERATION

1. General

Aerodynamic seals (Ref. Fig. 1) are located vertically along the aft edge of the vertical stabilizer trailing edge. The seals have a rounded bulb cross section, and slip into channeled seal retainers. The seals close the space between the trailing edge of the vertical stabilizer box structure and the rudder leading edge. The seals are made of silicone rubber reinforced with fiber glass and covered with a wear-resistant Dacron.



ZONE 324



Aerodynamic Seals
Figure 1

VERTICAL STABILIZER AERODYNAMIC SEALS - REMOVAL AND INSTALLATION

1. General

This removal and installation procedure applies to all the silicone rubber seals incorporated in 11 panels which are installed vertically on each side of the vertical stabilizer trailing edge. A channeled retainer in each panel accepts the bulb-type seal which, by contact, closes the gap between the vertical stabilizer trailing edge and the rudder leading edge.

2. Equipment and Materials

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

3. Referenced Procedures

29-11-00 Hydraulic Power System - Maintenance Practices

R 20-51-04 Environmental Sealing - Maintenance Practices

4. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

A. Removal

(1) Unscrew captive screws on panel upper and lower edges (Ref. Fig. 401).

(2) When panel opens, pull hold-open bar away from clip to hold panel in open position.

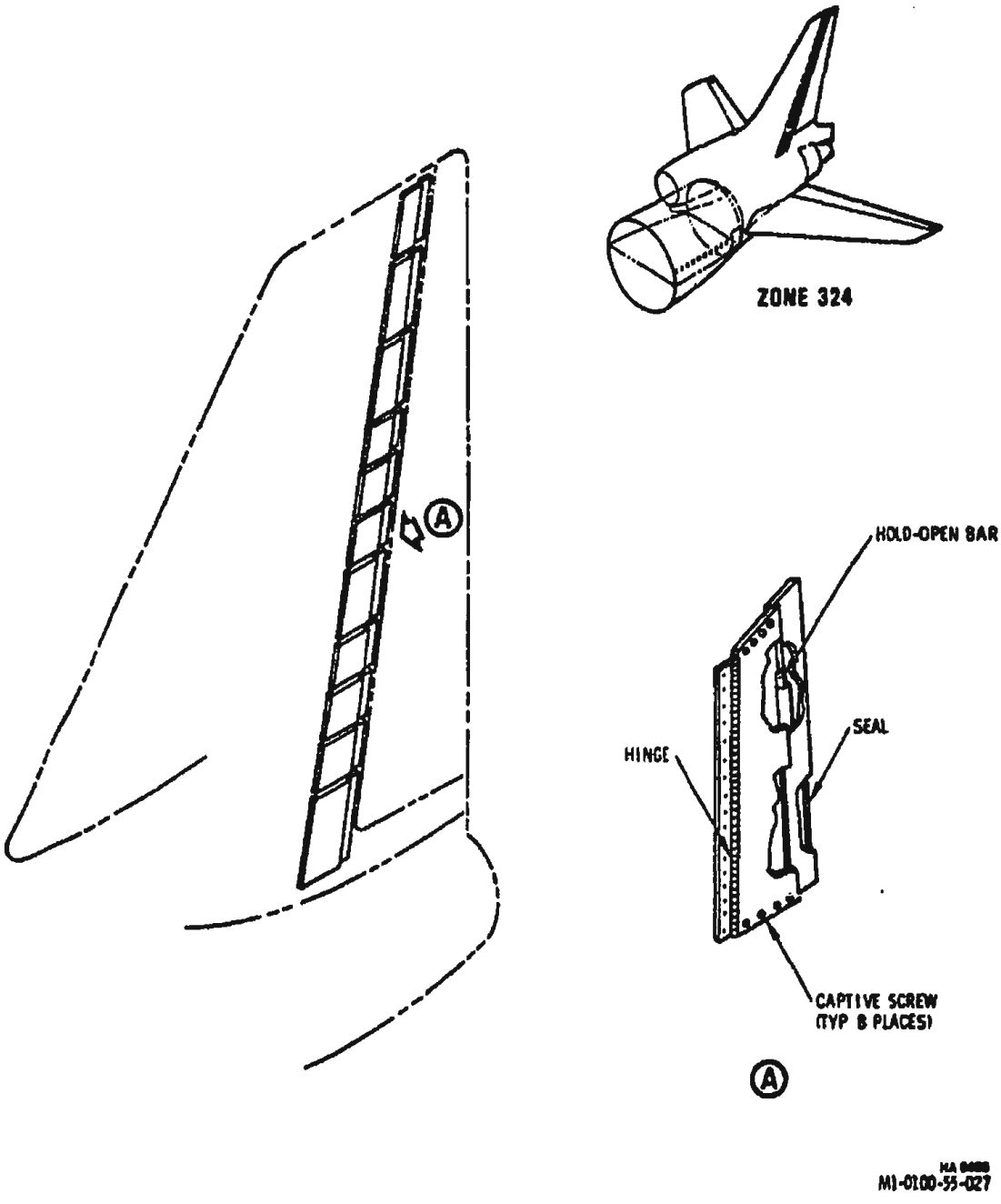
(3) Pull seal out of retainer from panel bottom edge. Discard seal.

B. Installation

(1) Install new seal in panel retainer channel.

R (2) Apply sealing compound to each captive screw (Ref.
R 20-51-04).

(3) Disengage hold-open bar and close panel.



R Vertical Stabilizer Aerodynamic Seals - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL

R (4) Install and tighten captive screws on panel upper and
R lower edges.

R (5) Remove warning tags installed at beginning of Paragraph
R 4.

RUDDER - DESCRIPTION AND OPERATION

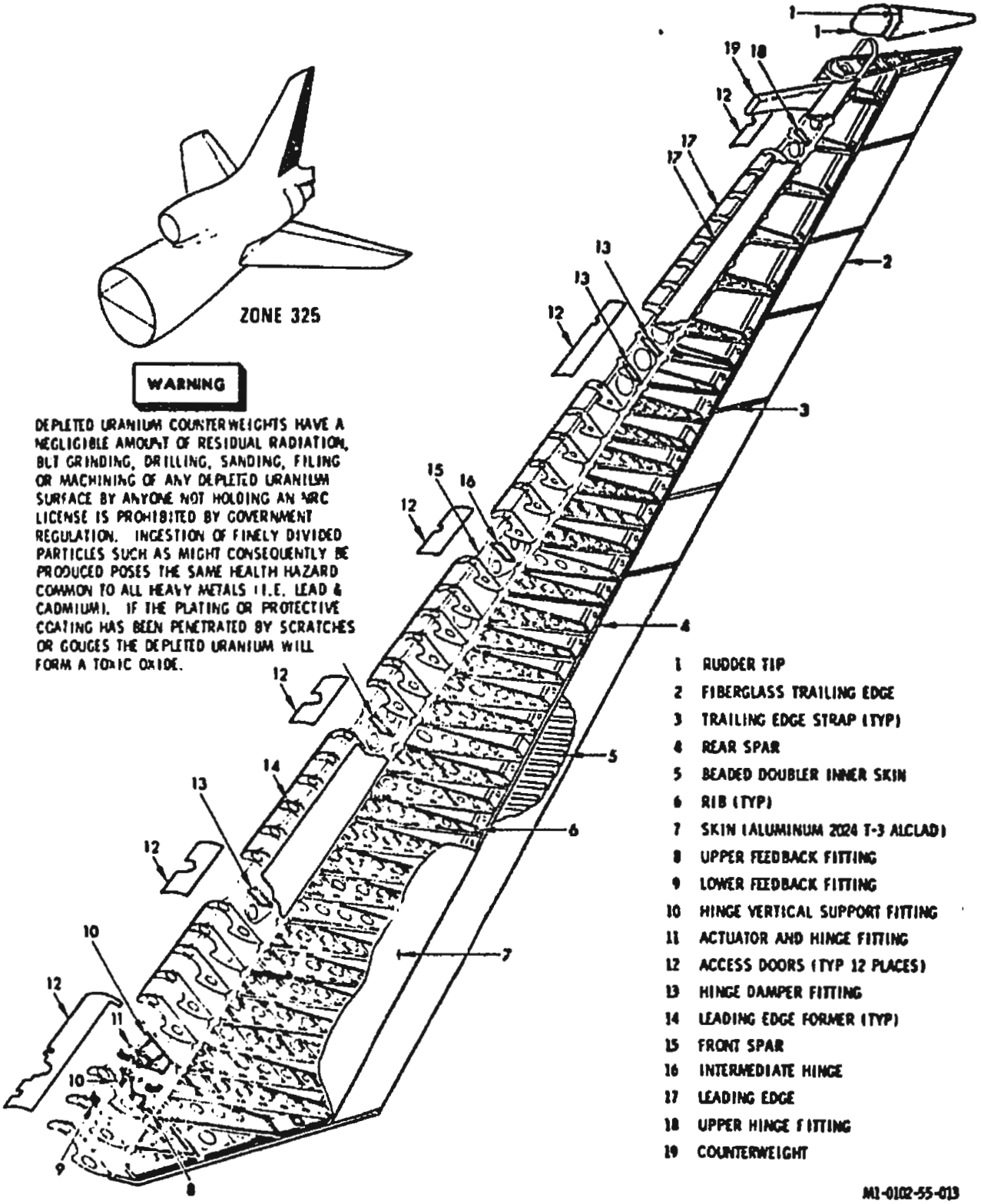
1. General

The rudder (Ref. Fig. 1) consists of a box structure with front and rear spars, ribs, surface skins, and leading and trailing edge sections.

R WARNING: DEPLETED URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE
R AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING,
R SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM
R SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS
R PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF
R FINELY EIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE
R PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL
R HEAVY METALS (ie. LEAD & CADMIUM). IF THE PLATING OR
R PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR
R GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE.

WARNING

DEPLETED URANIUM COUNTERWEIGHTS HAVE A NEGLIGIBLE AMOUNT OF RESIDUAL RADIATION, BUT GRINDING, DRILLING, SANDING, FILING OR MACHINING OF ANY DEPLETED URANIUM SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS PROHIBITED BY GOVERNMENT REGULATION. INGESTION OF FINELY DIVIDED PARTICLES SUCH AS MIGHT CONSEQUENTLY BE PRODUCED POSES THE SAME HEALTH HAZARD COMMON TO ALL HEAVY METALS (I.E. LEAD & CADMIUM). IF THE PLATING OR PROTECTIVE COATING HAS BEEN PENETRATED BY SCRATCHES OR GOUGES THE DEPLETED URANIUM WILL FORM A TOXIC OXIDE.



1 RUDDER TIP
2 FIBERGLASS TRAILING EDGE
3 TRAILING EDGE STRAP (TYP)
4 REAR SPAR
5 BEADED DOUBLER INNER SKIN
6 RIB (TYP)
7 SKIN (ALUMINUM 2024 T-3 ALCLAD)
8 UPPER FEEDBACK FITTING
9 LOWER FEEDBACK FITTING
10 HINGE VERTICAL SUPPORT FITTING
11 ACTUATOR AND HINGE FITTING
12 ACCESS DOORS (TYP 12 PLACES)
13 HINGE DAMPER FITTING
14 LEADING EDGE FORMER (TYP)
15 FRONT SPAR
16 INTERMEDIATE HINGE
17 LEADING EDGE
18 UPPER HINGE FITTING
19 COUNTERWEIGHT

M1-0102-55-013

R
R

Rudder Structure
Figure 1

EFFECTIVITY: ALL

001B

MAIN FRAME - DESCRIPTION AND OPERATION

1. General

The rudder main frame front spar consists of clad 2024-T3 aluminum web members, extruded 7075-T 76511 caps, stiffeners, fittings, and doublers.

The front spar web has inspection holes next to each hinge fitting.

The rear spar is a channel made of sheet clad 7075-T6 aluminum. Rib attach angles are used as stiffeners. The beam flanges are spliced with angle clips.

Ribs are constructed of 2024-T3 sheet aluminum alloy web with 7075-T6 aluminum alloy caps and stiffeners.

The rudder trailing edge is made from multiple layers of fiber glass that are internally stiffened with bonded beaded doublers. The wedge-shaped trailing edge is riveted to the rudder rear spar flange. The leading edge consists of pressed aluminum alloy former ribs, hinge and flutter damper fittings, leading edge skins, and access door panels.

PLATES AND SKINS - DESCRIPTION AND OPERATION

1. General

Fixed leading edge skins and removable door panels are fastened to the rudder leading edge former ribs. The removable door panels are located next to the hinge, damper, and actuator attach points. The leading edge skins and door panels are made of 2024-T3 aluminum alloy. The rudder tip has two removable sections of rounded sheet metal. The tips are deep drawn and welded assemblies of chem-milled 6061-T6 aluminum alloy. The rudder cover panels are constructed of 2024-T3 clad aluminum alloy sheet. Three large cover panels are provided on each side of the rudder. Smaller panels are located at the lower end of the rudder.

RUDDER TIP ASSEMBLY - REMOVAL AND INSTALLATION

1. General

The rudder tip assembly consists of two removable sections, one forward and one aft.

2. Equipment and Materials

R Sealing Compound, LAC Spec LCM40-2180, or equivalent

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

3. Referenced Procedures

29-11-00 Hydraulic Power System - Maintenance Practices

20-51-04 Environmental Sealing - Maintenance Practices

4. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

A. Removal

(1) Aft Rudder Section

(a) Remove bolts attaching aft section, 325L, to rudder aft top structure (Ref. Fig. 401).

(b) Disconnect bonding jumper by removing attaching bolt, washers, and nut.

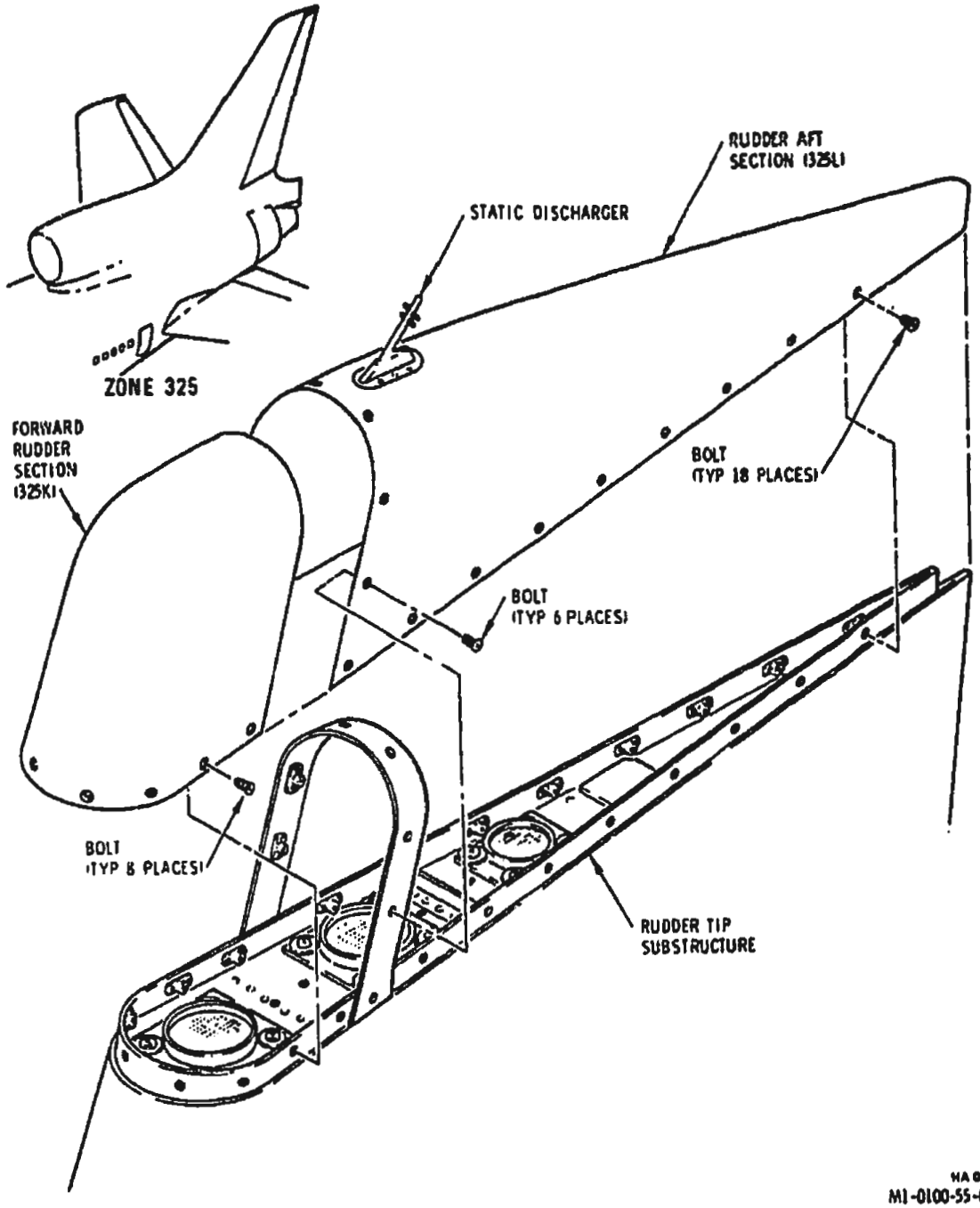
(c) Stow section in protected area (as required).

(2) Forward Rudder Section

(a) Remove bolts attaching forward section, 325K, to rudder forward top structure.

(b) Disconnect bonding jumper by removing attaching bolt, washers, and nut.

(c) Stow section in protected area (as required).



Rudder Tip Assembly - Removal and Installation
Figure 401

B. Installation

(1) Aft Rudder Section

(a) Hold aft section, 325L, near rudder aft top structure and connect bonding jumper by installing attaching bolt, washers, and nut.

R (b) After assembly, brush-seal bonding jumper and ground connection with LCM40-2180 sealing compound, or equivalent (Ref. 20-51-04).

(c) Apply LCM40-2121A sealing compound, or equivalent, to each bolt (Ref. 20-51-04).

(d) Wet-install bolts attaching section to rudder aft top structure.

(2) Forward Rudder Section

(a) Hold forward section, 325K, near rudder forward top structure and connect bonding jumper by installing attaching bolt, washers, and nut.

R (b) After assembly, brush-seal bonding jumper and ground connection with LCM40-2180 sealing compound, or equivalent (Ref. 20-51-04).

(c) Apply LCM40-2121A sealing compound, or equivalent, in accordance with LAC Process Bulletin PB75-425.

to each bolt (Ref. 20-51-04).

(d) Wet-install bolts attaching section to rudder forward top structure.

(3) Remove warning tags installed at beginning of Paragraph 4.

RUDDER LEADING EDGE PLATES - REMOVAL AND INSTALLATION

1. General

This removal and installation procedure applies to all six two-piece plates which are installed on the rudder leading edge ribs between fixed leading edge skin segments.

2. Equipment and Materials

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

3. Referenced Procedures

29-11-00 Hydraulic Power System - Maintenance Practices

R 20-51-04 Environmental Sealing - Maintenance Practices

4. Removal/Installation

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-01). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

A. Removal

(1) Remove screws in plate edges (Ref. Fig. 401).

(2) Stow plate in protected area (as required).

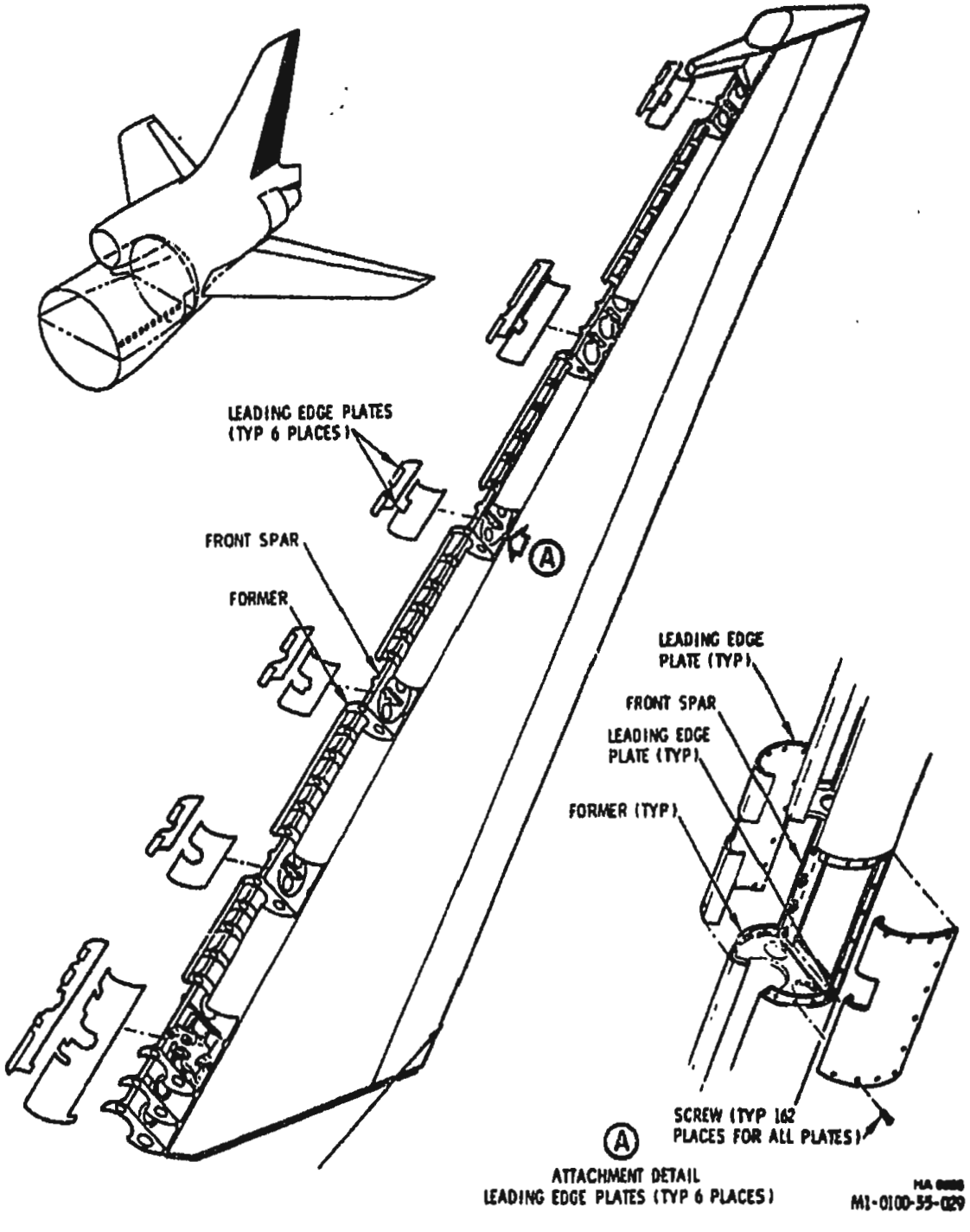
B. Installation

R (1) Apply LCM40-2121A sealing compound, or equivalent, to each screw (Ref. 20-51-04).

(2) Hold plate in position between related rudder leading edge ribs.

(3) Wet-install screws in plate edges.

(4) Remove warning tags installed at beginning of Paragraph 4.



Rudder Leading Edge Plates - Removal and Installation
Figure 401

PIVOT BEARING - MAINTENANCE PRACTICES

1. General

This procedure provides information for lock-wiring the pivot bearing retainer nut to the bearing housing. There are two pivot bearings, located at FS 1978, LBL62 and RBL62. For lock-wiring purposes, eight holes are provided in the bearing retainer nut and the bearing housing. Each bearing retainer nut is located at the outboard side of the bearing and is secured with lock-wire at two locations, 135 degrees apart.

It is assumed that the requirement for lock-wiring of the pivot bearing retainer nut will occur only when an inspection reveals that the lock-wire is broken. In such instances, the lock-wire must be replaced at both locations.

2. Equipment and Materials

Torque wrench (1/2-inch drive)

R Spanner wrench (P/N 1310737), or equivalent

Lock-wire - AMS5698B, Inconel X-750, No. 1 Temper, 0.032-inch diameter, or equivalent

Control Column Lock - BA80, or equivalent

3. Referenced Procedures

6-40-00	Exterior Access Doors and Panels, Zone 300 Afterbody
20-00-06	Safetying Practices - LCP71-1098A

4. Pivot Bearing Lock-wire Removal/Installation

NOTE: Retain all screws, bolts, nuts and washers from removed assemblies for reuse at time of reinstallation.

A. Removal

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

R (1) Install control column lock, BA80, or equivalent.

R (2) Gain access to pivot bearing area, left or right side, by removing the following assemblies.

(a) Horizontal stabilizer inboard fairing panel, 334AB or 344AB and upper and lower seal supports on inboard closure rib.

(b) Pivot bearing access panel, 318BL or 318BR.

(c) Pivot bearing access panel and fairing closure assembly 318EL or 318ER.

(2) Remove all remaining pieces of lock-wire in bearing housing and bearing retainer nut at both locations.

NOTE: Using spanner wrench and drive, the retainer nut may be turned counterclockwise (loosened) to make broken ends of lock-wire in retainer nut more accessible.

B. Installation

(1) To lock-wire pivot bearing retainer nut to bearing housing at left bearing location, proceed as follows (Ref. Fig. 201).

(a) Using spanner wrench, torque retainer nut to 67 to 75 lb ft.

(b) Select and mark lowest accessible hole on bottom side of bearing housing for installation of lock-wire.

(c) From marked hole proceed counterclockwise around bearing housing and select and mark top hole in housing 135 degrees (third hole) from hole marked at lower location.

(d) At bottom location measure distance from first hole selected in bearing housing to nearest hole in retainer nut in counterclockwise direction. Retain this dimension and mark hole in retainer nut.

(e) Mark for lock-wiring upper hole in retainer nut, 135 degrees (third hole) from hole marked at lower location.

(f) Using spanner wrench, turn retainer nut counterclockwise (loosen) until upper marked hole is in an accessible area near bottom.

(g) With piece of lock-wire approximately eight inches in length, thread through marked hole in retainer nut and twist to two turns less that dimension obtained in Step B(1)(d).

(h) Turn retainer nut clockwise and torque to 67 to 75 lb ft.

(i) Lock-wire retainer nut to bearing housing hole previously marked in Step B(1)(c), Ref. 20-00-06.

(j) Lock-wire retainer nut to bearing housing at bottom hole location.

(k) Reinstall assemblies removed in Step A(1).

(2) To lock-wire pivot bearing retainer nut to bearing housing at right bearing location, proceed as follows.

(a) Using spanner wrench, torque retainer nut to 67 to 75 lb ft.

(b) Select hole in retainer nut nearest to bottom centerline of bearing.

(c) Select and mark hole in bearing housing to be lock-wired.

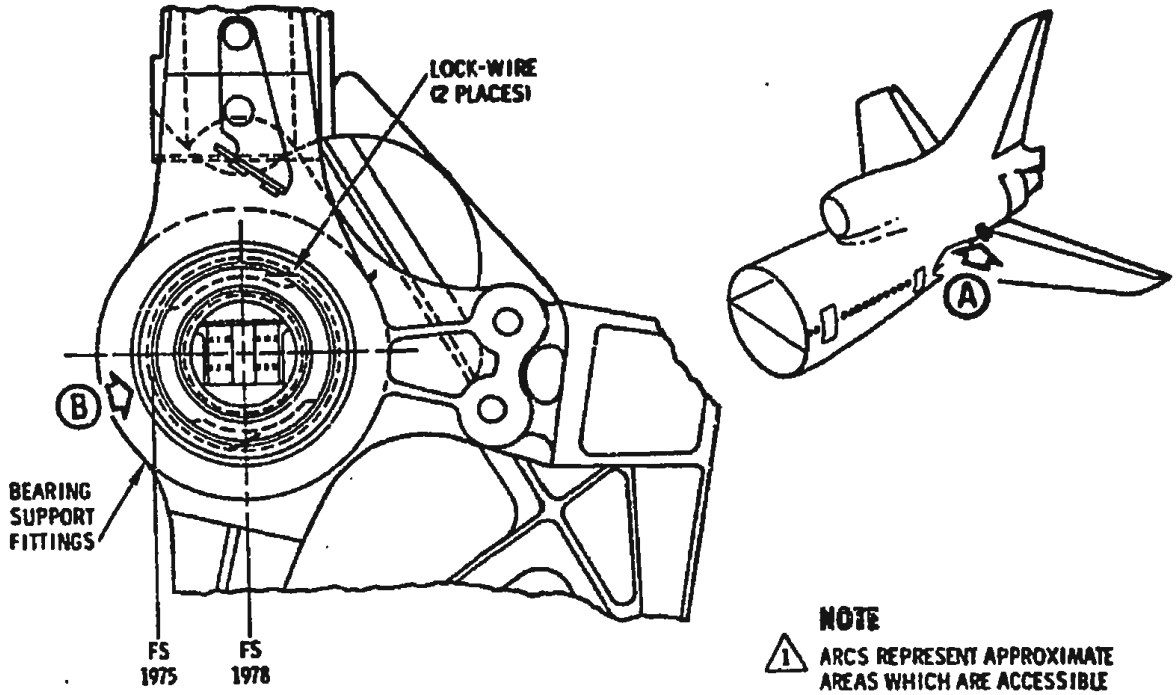
NOTE: This will be next hole in clockwise direction from hole marked in retainer nut in Step B(2)(b).

(d) From marked hole proceed clockwise around bearing housing and select and mark hole in housing 135 degrees (third hole) from hole marked at lower location.

(e) Proceed with Steps B(1)(d) through B(1)(k).

R (f) Remove control column lock installed in Paragraph
R 4A(1).

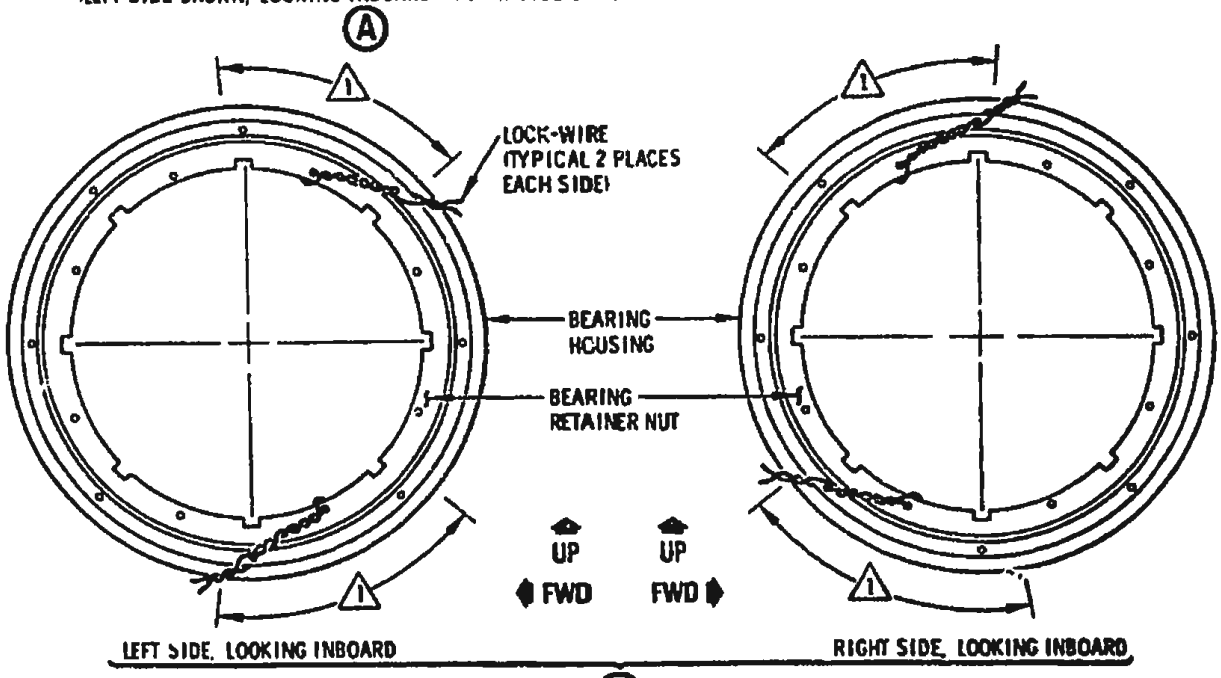
R (g) Remove tags from Flight Engineer/Second Officers
R Panel, Zone 215 and Hydraulic Service Panel, Zone
R 147



PIVOT BEARING HOUSING AND RETAINER INSTALLATION
(LEFT SIDE SHOWN, LOOKING INBOARD - RIGHT SIDE OPPOSITE)

NOTE

1 ARCS REPRESENT APPROXIMATE AREAS WHICH ARE ACCESSIBLE FOR INSTALLATION OF LOCK-WIRE



B

PIVOT BEARING LOCK-WIRE INSTALLATION

M1-0100-55-095

R R Pivot Bearing Retainer Nut Lock-wire Installation
Figure 201

R R 001B EFFECTIVITY: ALL

HORIZONTAL STABILIZER PIVOT BEARING REMOVAL AND INSTALLATION

1. Equipment and Materials

Grease - MIL-G-23827A, or equivalent

Grease - MIL-T-5544, or equivalent

1-1-1 Trichloroethane - MIL-T-81533A, or equivalent

Lock-wire - AMS5698B, Inconel X-750, No. 1 Temper, 0.032-inch diameter, or equivalent

Dial Indicator Gage, Starret P/N 25-241, or equivalent

R Sealant - PR 1422B-8, or equivalent

Control Column and Trim Wheel Lock, PN BA80-101, or equivalent

Horizontal Stabilizer Pivot Bearing Removal Tool Kit, PN 1310709-101, (G/ITEL 55-51-12), or equivalent, which includes the following components:

End Plate, PN 1310709-103, or equivalent

End Plate, PN 1310709-105, or equivalent

End Plate, PN 1310709-107, or equivalent

Bullet, PN 1310709-109, or equivalent

Shaft, PN 1310709-111, or equivalent

Block Assembly, PN 1310709-115, or equivalent

Side Load Link Wrench, PN 1310709-135, or equivalent

Spanner Wrench, PN 1310709-137, or equivalent

Dial Indicator Support Assembly, PN 1310709-141, or Equivalent

Planer Jacks No. 1 and No. 2, Armstrong Bros. Tool Co., or equivalent

Spanner Wrench, PN 1310737-101, or equivalent

Spanner Wrench, PN 1310738-101, or equivalent

Spanner Wrench, PN 1310739-101, or equivalent

Spanner Wrench, PN 1310740-101, or equivalent

Stabilizer Jack Pad, PN 1310741-101, or equivalent

Stabilizer Jack Pad, PN 1310741-102, or equivalent

Enerpac Cylinder HP20G (Self contained hydraulic power unit), or equivalent

2. Referenced Procedures

6-40-00	Exterior Access Doors and Panels, Zone 300, Afterbody
6-50-00	Interior Panels, Zone 330, 340, Horizontal Stabilizer
12-23-15	Horizontal Stabilizer Lubrication
20-00-06	Safetying Practices - Maintenance Practices
20-55-01	Lockheed Overhaul Manual - Horizontal Stabilizer Pivot Bearing Housing
27-31-00	Elevator Control System - Adjustment and Test
29-11-00	Hydraulic Power System - Maintenance Practices
55-51-51	Pivot Bearing - Maintenance Practices
55-51-51	Horizontal Stabilizer Pivot Bearing - Inspection and Check
55-51-54	Horizontal Stabilizer Pivot Bearing Fitting - Removal and Installation

3. Removal/Installation

NOTE: Retain all screws, bolts, nuts and washers from removed assemblies for reuse at time of installation.

A. Removal (Ref. Fig. 401 and 402)

NOTE: Tag and identify removed parts as required to assure correct location and sequence when reinstalled.

WARNING: VERIFY ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND HYDRAULIC SERVICE PANEL, ZONE 147.

(1) Install the control column and trim wheel lock.

(2) Gain access to stabilizer bearing area by removing following access panels.

(a) Horizontal stabilizer lower aft airgate fairing, 337DB (Ref. 6-40-00, Zone 300, Afterbody).

(b) Horizontal stabilizer upper and lower fairing panels, 334AB and 334AT, or 344AB and 344AT (Ref. 6-40-00, Zone 300, Horizontal Stabilizer).

(c) Horizontal stabilizer pivot bearing access panel, 318BL or 318BR (Ref. 6-40-00).

(d) Horizontal stabilizer pivot bearing access panel and fairing closure assembly 318EL or 318ER (Ref. 6-40-00, Zone 300, Afterbody).

(e) Horizontal stabilizer end rib closure panel 334AZ or 344AZ (Ref. 6-50-00, Zone 330-340, Horizontal Stabilizer).

WARNING: USE SOLVENT IN A WELL VENTILATED AREA. DO NOT INHALE SOLVENT VAPORS OR ALLOW SOLVENT TO COME INTO CONTACT WITH SKIN. KEEP SOLVENT AWAY FROM FLAME.

(3) Clean Horizontal Pivot Bearing Assembly with Trichloroethane solvent and a clean, lint-free cloth.

(4) Check clearance between shims and spacers (22, 23, 24) and note for reassembly purposes.

NOTE: This information is necessary for reassembly.

(5) Unload horizontal stabilizer pivot bearing as follows:

NOTE: It is necessary to support the stabilizer only on the same side as the bearing being removed.

(a) Open pitch servo access doors 317AB and 317CB to gain access to load turnbuckles on elevator drive lower attachments (Ref. Fig. 401).

(b) On same side as bearing being removed, loosen turnbuckle approximately 12 turns to relieve

horizontal loads from elevator cable (Ref. 27-31-00).

(c) Install stabilizer jack pad on aft end of APU shear panel just under pivot hinge fitting.

(d) Install planer jack on stabilizer jack pad and extend planer jack to contact pivot fitting attach bolt (Ref. Fig. 401).

NOTE: Lubricate jack with MIL-T-5544 grease, or equivalent, prior to use.

(e) Position dial indicator at left and right inboard bracket of horizontal stabilizer pivot bearings.

CAUTION: ENSURE THAT LOAD ON JACK DOES NOT EXCEED 5,000 POUNDS (REF. FIG. 401).

(f) Raise jack until needle on dial indicator deflects approximately 0.010 inch (Ref. 55-51-51).

CAUTION: REMOVE ONLY ONE SIDE LOAD LINK AT A TIME TO AVOID POSSIBLE SHIFTING OF HORIZONTAL STABILIZER OFF CENTERLINE OF AFTERBODY.

(6) Disconnect pivot assembly lubrication hose from lube fitting.

(7) Remove lube fitting and lube fitting adapter (7) from side load link (Ref. Fig. 402).

NOTE: Item numbers in parentheses in Steps 3A(7) through 3A(32) refer to Figure 402.

(8) Remove side load link nut (1), washers (2)(4), and bolt
R (3) which attach side load link to structure.

R (9) On aircraft without SB55-030,
R remove two setscrews (5) which secure side load link retainer nut (6) to inner pin (12).

R (9) On aircraft with SB55-030,
R remove two lockwired screws (5) which secure side load
R link retainer nut (6) to inner pin (12).

(10) Using Spanner Wrench (P/N 1310709-135), remove side load link retainer nut.

(11) Remove outboard shim and thrust washer (8) located between retainer nut and outboard end of side load link.

NOTE: Tag and identify location and thickness of shims to assure correct location, thickness and sequence for installation.

(12) Remove side load link (7).

(13) Remove inboard shim and thrust washer (9) located between inboard end of side load link and outer pin internal seat.

NOTE: Tag and identify location and thickness of shims to assure correct location and sequence for
R installation.

R (14) On aircraft without SB55-030,
R remove two setscrews (10) which secure inboard retainer nut (11) to inner pin assembly.

R (14) On aircraft with SB55-030,
R remove two lockwired screws (10) which secure inboard
R retainer nut (11) to inner pin assembly.

(15) Using spanner wrench (Ref. PN 1310709-137), remove inboard retainer nut.

CAUTION: DO NOT EXCEED MAXIMUM ALLOWABLE FORCE OF 24,000 LBS ON PULLER.

(16) Install block (PN 1310709-115) between outboard stabilizer fitting (PN 1532242-101/102) and titanium structural member (PN 1517197) to avoid putting reaction loads on side load link on opposite side.

(17) Using inner pin puller, remove inner pin (12) and
R O-rings (13) (Ref. Fig. 403 and 404).

R (18) On aircraft without SB55-030,
R remove two setscrews (17) which secure outboard tapered sleeve retainer nut (18) to outer pin assembly.

R (18) On aircraft with SB55-030,
R remove two lockwired screws (17) which secure outboard
R tapered sleeve retainer nut (18) to outer pin assembly.

(19) Using spanner wrench (PN 1310740-101), remove outboard tapered sleeve retainer nut (18).

(20) Remove shim (19).

(21) Using spanner wrench (PN 1310739-101), remove inboard tapered sleeve retainer nut (14).

(22) Remove shim (15).

(23) Remove inboard tapered split sleeve (16) by inserting a heavy brass drift inside against inner pin edge and tapping just under tapered split sleeve.

(24) If tapping inside of pin does not dislodge inboard tapered split sleeve, remove sleeve using retaining nut for leverage as follows:

(a) Partially install inboard tapered sleeve retainer nut on outer pin so that holes through retainer nut align with threaded holes in tapered split sleeve.

(b) Install four internal wrenching screws (10-24 UNC, 1 1/2 inches long) through nut and into sleeve with screws spaced 90 degrees apart.

(c) Jack tapered sleeve out of support fitting by loading each nut approximately one quarter turn at a time to avoid cocking the split sleeve.

(25) Remove outboard tapered split sleeve (20) by inserting a heavy brass drift inside against outer pin (21) edge and tapping just under tapered split sleeve.

(26) If tapping inside of pin does not dislodge outboard tapered split sleeve, remove sleeve using outboard tapered sleeve retainer nut for leverage as follows:

(a) Partially install outboard tapered sleeve retainer nut on outer pin so that holes through retainer nut align with threaded holes in tapered split sleeve.

(b) Install four internal wrenching screws (10-24 UNC, 1 1/2 inches long) through nut and into sleeve with screws spaced 90 degrees apart.

(c) Jack tapered sleeve off of outer pin by loading each nut approximately one quarter turn at a time.

CAUTION: DO NOT EXCEED MAXIMUM ALLOWABLE FORCE OF 24,000 LBS FORCE ON PULLER.

(27) Using outer pin puller, dislodge outer pin but do not remove from bearing at this time (Ref. Fig. 403 and 404).

NOTE: If outer pin is seized and cannot be removed without exceeding 24,000 lbs. force, then remove

bearing and pin together in accordance with Step 3A(31) below and omit Steps 3A(26) through 3A(30).

(28) Remove puller and string a length of safety wire through pivot pin to catch spacer (22) and shims (23)(24) in correct sequence.

(29) Remove outer pin and tag and identify location and thickness of spacer and shims to assure correct lateral positioning of outer pin on installation.

(30) Remove lockwire (2 places) between bearing retaining nut (25) and bearing housing (30).

(31) Using spanner wrench (PN 1310737-101), remove bearing retaining nut and shim (26).

NOTE: If bearing retaining nut cannot be removed, refer to Step 3A(33).

(32) Remove bearing (27).

(33) If nondestructive methods fail to remove bearing retaining nut, proceed with the following destructive methods (Ref. Fig. 403 and 404).

(a) Locate spanner wrench slot in bearing retaining nut.

(b) Drill one hole completely through the housing flange and completely through the nut slot area using a number 21 cobalt bit or equivalent. Enlarge hole progressively with the intention of severing the nut wall in the slot area.

(c) Using a number 21 cobalt bit or equivalent, drill a hole through housing flange only on each side of slot area.

(d) Insert a rivet set, which has been machined down to 5/32 inch, into housing flange outer holes and collapse the nut.

(e) Break pivot pin/bearing combination loose but do not remove at this time.

(f) String a length of safety wire through pivot pin to catch spacers and shims in correct sequence.

(g) Remove outer pin/bearing combination from housing and tag and identify location and thickness of

spacers and shims to assure correct lateral positioning of outer pin on installation.

NOTE: If bearing cannot be removed from housing by hand, use bearing puller (Ref. Fig. 403 and 404).

NOTE: The Pivot Bearing Housing may be replaced in accordance with Lockheed Overhaul Manual 20-55-01 following removal of the Pivot Bearing Fitting (Ref. 55-51-54).

B. Installation (Ref. Fig. 401 and 402)

(1) If horizontal stabilizer pivot bearing fitting was removed, reinstall in accordance with Maintenance Manual 55-51-54.

NOTE: Lubricate lube fitting on bearing support fitting, ensuring all passages free and grease grooves are filled with lubricant.

(2) Install pivot bearing (27) in housing (30).

On aircraft with P/N 741034 pivot bearing, install pivot bearing(27) into housing (30) with loader slot in a horizontal position and facing inboard away from bearing retaining nut (25).

NOTE: Item numbers in parentheses in Steps 3B(2) through 3B(29) refer to Figure 402.

(3) Install shim (26) and bearing retainer nut (25).

(4) Using spanner wrench (PN 1310737-101), torque retainer nut 67 to 75 lb ft and lock-wire nut (Ref. 55-51-51).

C NOTE: When the bearing installation has not been
C disassembled, two safeties may be installed in
C the safety wire holes in the bottom flange at
C successive holes after accomplishing Step 3B(4).

(5) Butter lube and stack spacer (22), laminated shim (23) and shim (23) on outer pin (21) in order shown.

(6) Butter lube, stack and position shim, laminated shim and spacers (24) between pivot bearing inboard face and inboard fitting outboard face (PN 1532242-101/102).

(7) Install bullet (PN 1310709-109) on inboard end of outer pin.

(8) Install outer pin through pivot bearing, stacked shims and spacers, and inboard fitting. Remove bullet from outer pin.

NOTE: Add shims to take up any clearance noted in Step 3A(4).

(9) Install inboard tapered split sleeve (16), shim (15) and nut (14) on inboard threaded end of outer pin.

(10) Torque inboard nut to 1200 lb. inch to seat tapered split sleeve. Back off and re-torque 800 to 900 lb. inch.

(11) Verify position of outer pin. If washer/shim group (22/23) is proper thickness, base of pin's truncated cone should be flush with inboard face of the outboard fitting (PN 1532242-101/102). If base is not flush, add or remove shims as necessary and repeat Steps 3B(6) through 3B(12).

NOTE: Pins truncated cone may be positioned within the confines of inboard machined face of outboard fitting and its counter bore but must not protrude beyond fitting inboard machined face.

(12) Using a feeler guage verify that pivot pin is centered in outboard fitting. A nominal gap of approximately 0.130 inch between the fitting bushing and pin's truncated cone is expected. If necessary, adjust height of horizontal stabilizer in order to achieve precise center. Re-torque inboard split tapered sleeve nut if adjustment is made.

(13) Install outboard tapered split sleeve (20), shim (19) and outboard nut (18) on outboard end of outer pin. Make sure that shim does not slip down while tightening nut, preventing proper seating of tapered split sleeve.

(14) Torque outboard nut to 1200 lb. inch to seat tapered split sleeve. Back off nut and re-torque 800 to 900 lb. inch.

(15) On aircraft without SB55-030, loosen nut until first setscrew hole is aligned with pin keyway. Install two setscrews (17) 180 degrees apart.

(15) On aircraft with SB55-030, loosen nut until first screw hole is alighned with pin keyway. Wet intall two screws (17) 180 degrees apart using PR 1422B-8 sealant, or equivalent. Run screw

R into respective nut, torque to 15-25 in-lbs then
R lockwire screw.

R NOTE: When engaged against lower face of adjacent
R keyway slot, screw head should not bottom on
R outside diameter of nut.

R There is no minimum torque requirement on the
R outboard nut, but some positive force must be
R applied to tapered split sleeves to insure that
R no unwanted free play exists.

(16) Grease and install packing O-rings (13) on inner pin (12). Install outboard packing O-ring into recess of outer pin after inner pin has been partially installed to prevent cutting outboard packing O-ring on threads of inner pin.

(17) Install inner pin retaining nut (11) on inner pin.
R Torque nut 800 to 900 lb. inch.

R (18) On aircraft without SB55-030,
R loosen inner pin retaining nut until first setscrew hole is aligned with pin keyway. Install two setscrews (10) 180 degrees apart.

R (18) On aircraft with SB55-030,
R loosen inner pin retaining nut until first screw hole
R is aligned with pin keyway. Wet install two screws
R (10) 180 degrees apart using PR1422B-8 sealant, or
R equivalent. Run screw into respective nut, torque to
R 15-25 in-lbs, then lockwire screw.

R NOTE: When engaged against lower face of adjacent
R keyway slot, screwhead should not bottom on
R outside diameter of nut.

R There is no minimum torque requirement on the
R outboard nut, but some positive force must be
R applied to tapered split sleeves to insure that
R no unwanted free play exists.

(19) Install spacer and laminated shim (9) on side load link (7) and insert through inner pin from outboard side.

(20) With side load link held against inner pin, verify that attach bolt (3) has a slip fit with side load link when installed into structural fitting. If not, remove or add shims (9) until slip fit is achieved. Install washers (2)(4) and nut (1). Torque nut 70 to 80 lb
R inch.

R (21) On aircraft without SB55-030,
R install spacer and shim (8), then thread nut (6) onto end of inner pin. Add or subtract shims so that 30 to 50 lb. inch torque exists when setscrew holes in inner pin align with keyways in nut. Install two locking setscrews (5) 180 degrees apart.

R (21) On aircraft with SB55-030,
R install spacer and shim (8), then thread nut (6) onto
R end of inner pin. Add or subtract shims so that 30 to
R 50 inch-lb torque exist when screw holes in inner pin
R align with keyways in nut. Wet install two screws (5)
R 180 degrees apart using PR1427B-8 sealant, or
R equivalent. Run screw into respective nut, torque to
R 50-60 in-lbs then lockwire screw.

R NOTE: When fully engaged against lower face of
R adjacent keyway slot, screw head should not
R bottom on outside diameter of pin. Any
R measurable amount is acceptable.

(22) Connect lube fitting (7) and lube fitting adapter to side load fitting.

(23) Connect lubrication hose to lube fitting.

(24) Lubricate pivot bearing assembly (3 places each side) (Ref. 12-23-15).

(25) Remove screw jack and jack pad blocking horizontal stabilizer center box.

(26) Tighten and adjust load turnbuckle loosened in Step 3A(5)(d) (Ref. 27-31-00).

(27) Remove tags from hydraulic control panels.

WARNING: VERIFY ALL BLOCKS, JACKS AND JACK HEADS ARE REMOVED FROM STABILIZER. DOUBLECHECK THAT STABILIZER IS CLEAR FOR OPERATION.

WARNING: VERIFY FOLLOWING BEFORE PRESSURIZING ANY HYDRAULIC SYSTEM:

PITCH TRIM WHEEL IS AT ZERO DEGREES.

LANDING GEAR DOWNLOCK SAFETY PINS AND DOOR SAFETY DEVICES ARE INSTALLED.

TRAVEL AREAS OF ALL FLIGHT CONTROL SURFACES AND MAIN GEAR DOORS ARE CLEAR OF PERSONNEL AND GROUND EQUIPMENT.

AFFECTED HYDRAULIC SYSTEMS CAN ACCEPT HYDRAULIC PRESSURE.

(28) Turn on external hydraulic power systems A and C (Ref. 29-11-00).

(29) Slowly cycle stabilizer through full pitch travel. Visually verify normal operation of stabilizer. Visually check that stabilizer pivot bearing operation is normal (no binding or chattering) and that rotation is between outer pivot pin and inner race of bearing. For rotation to be correct, the painted witness stripe on bearing housing assembly (30) and painted stripe on outer bearing race (27) must remain aligned while inner bearing race rotates relative to outer pin (21).

(30) Inspect horizontal stabilizer pivot bearing freeplay (Ref. 55-51-51).

(31) Turn off hydraulic power (Ref. 29-11-00).

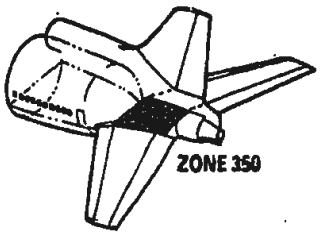
(32) Install all access panels removed in Step 3A(2).

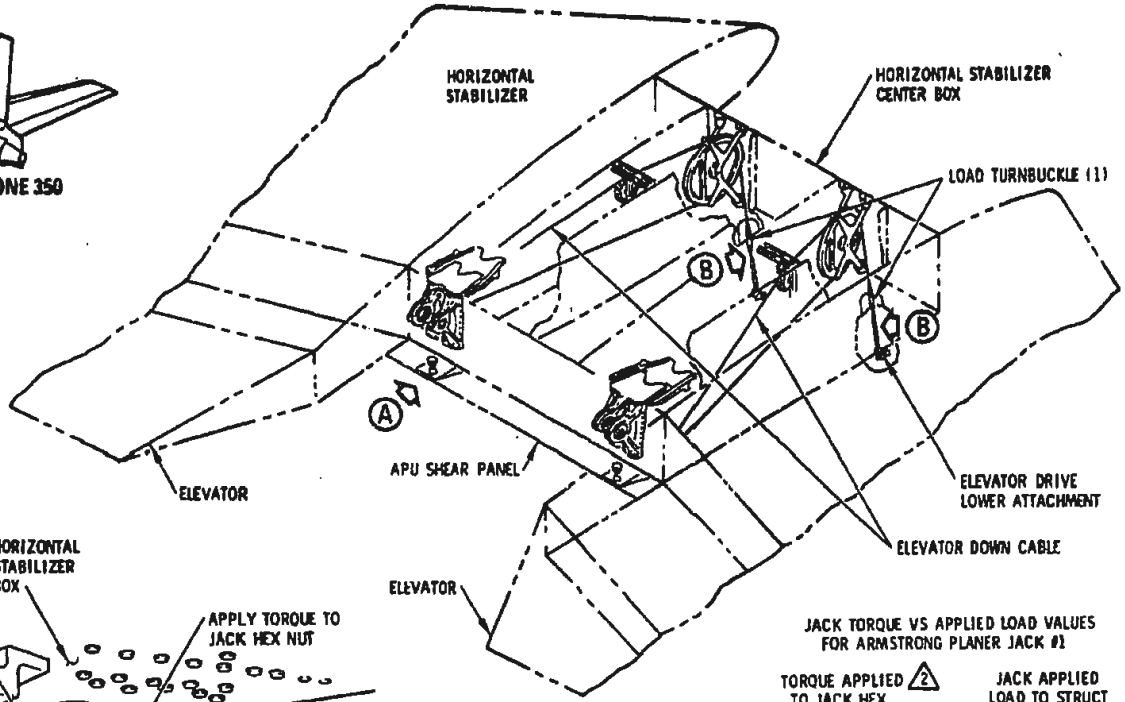
(33) Turn on hydraulic power (Ref. 29-11-00).

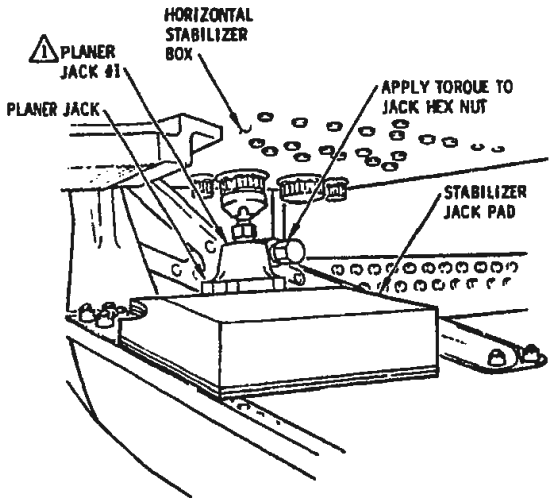
CAUTION: ON AIRCRAFT 001-031 WITH SB53-188 AND 032-999, AFTER CLOSING STABILIZER SERVO ACCESS DOORS (317AB, 317CB), ENSURE THERE IS NO INTERFERENCE BETWEEN DOOR BAFFLES AND STABILIZER SERVO OPERATING LINKAGE.

(34) Slowly cycle stabilizer through full pitch throws.

(35) Turn off hydraulic power if no longer required (Ref. 29-11-00).



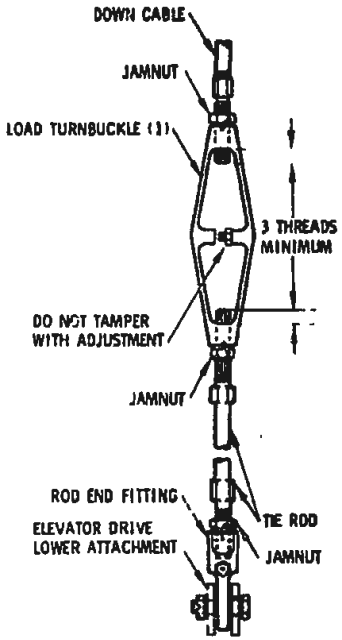




JACK AND BLOCK USED TO UNLOAD HORIZONAL STABILIZER

JACK TORQUE VS APPLIED LOAD VALUES FOR ARMSTRONG PLANER JACK #1

TORQUE APPLIED TO JACK HEX INCH-POUNDS (2)	JACK APPLIED LOAD TO STRUCT POUNDS FORCE
50	700
100	1610
150	2700
200	3400
250	4200
300	5000



LOAD TURNBUCKLE

NOTE

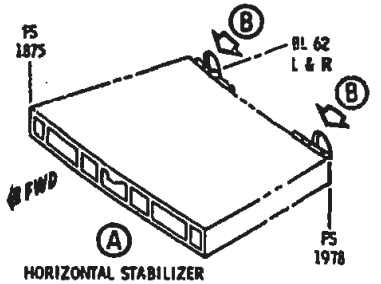
1. POSITION JACK ON SIXTH BOLT INBOARD ON HORIZONTAL STABILIZER BOX
2. CAUTION: DO NOT EXCEED JACKING LOAD OF 5000 POUNDS

APPROXIMATELY 230 POUND-INCHES TORQUE ON LUBRICATED JACK IS SUFFICIENT LOAD TO SUPPORT WEIGHT OF HORIZONTAL STABILIZER AND RELIEVE LOAD ON PIVOT BEARING. LUBRICATE JACK WITH MIL-T-5544 GREASE OR EQUIVALENT, PRIOR TO TORQUE APPLICATION

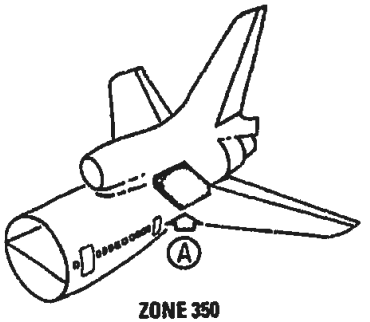
M1-0003-55-011

R Horizontal Stabilizer Support Locations
R Figure 401

R EFFECTIVITY: ALL
R
001B



HORIZONTAL STABILIZER CENTER SECTION



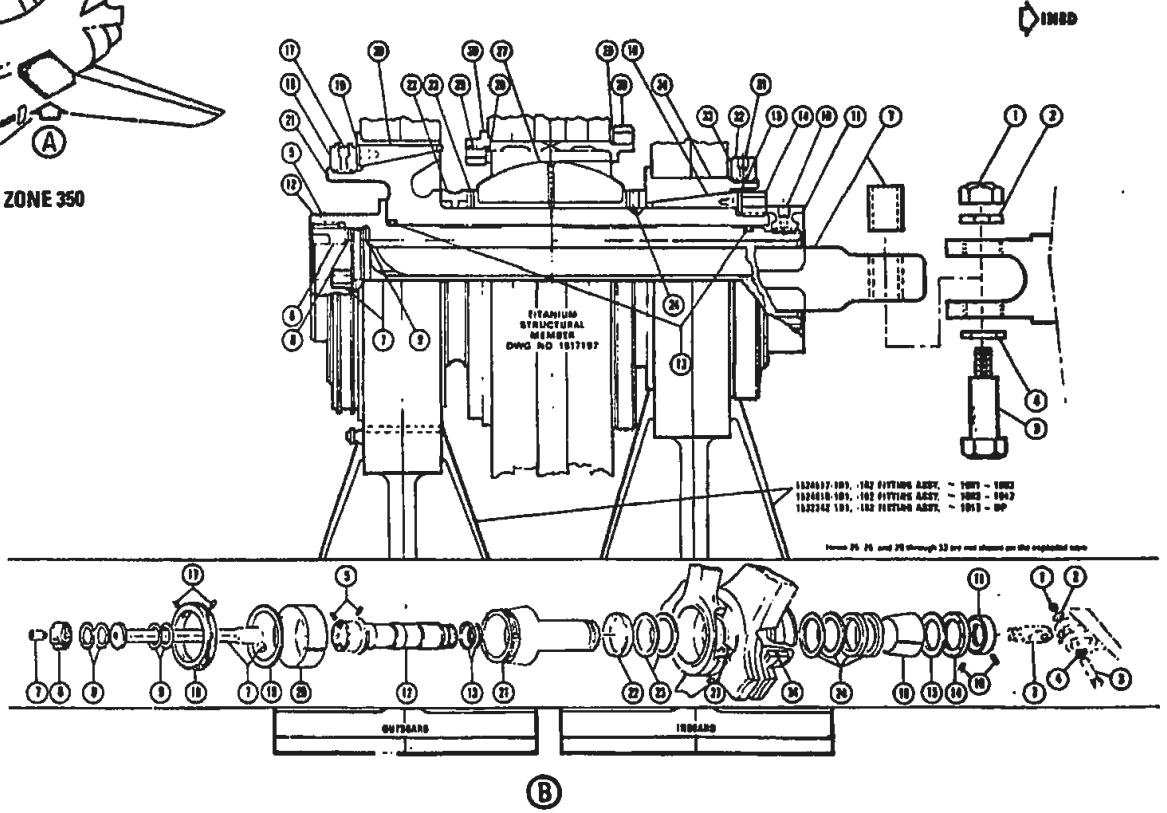
ZONE 350

ORDER OF REMOVAL

HORIZONTAL STABILIZER SIDE LOAD LINK AND PIN ASSEMBLY

	ORDER OF REMOVAL	PART NUMBER		ITEM
SIDE LOAD LINK	1.	MS21044N6		NUT
	2.	1517200-101		WASHER
	3.	1517186 101		BOLT
	4.	LS9672C14C		WASHER
	5.	NAS1081-4A8		SETSCREW
	6.	1514535-101		NUT, RETAINER
	7.	1514534-109		BUSHING
		1514534-107		LINK
		1536197-101		ADAPTER, LUBE FITTING
	8.	1514536 101		SHIM
		1514537-101		WASHER, THRUST
	9.	1514537-101		WASHER, THRUST
		1514536-101		SHIM
INNER PIN	10.	NAS1081-3A9		SETSCREW
	11.	1514549-101		NUT, INNER PIN RETAINER
	12.	1514536 101		PIN, INNER
	13.	MS28775-231		PACKING, "O" RING
		MS28775 229		PACKING, "O" RING
OUTER PIN	14.	729038 101	1001 1113, 1122 UP	NUT, INBD TAPERED SLEEVE
		*729038 103	1114 1121	
	15.	1514541-101	1001 1023	SHIM, INBD WDGE SPACER
		1514541 103	1024 UP	
	16.	1514542-101		SLEEVE, TAPERED AND SPLIT INBD
	17.	NAS1081 3A9		SETSCREW
	18.	1514547-101	1001 1113, 1122 UP	NUT, OUTBD TAPERED SLEEVE
		*1514547-103	1114 1121	
	19	1514550-101	1001 1023	SHIM, OUTBD NUT RETAINER
		1514550-103	1024 UP	
	20.	1514548-101		SLEEVE, OUTBD TAPERED
	21.	1514539 101	1001-1012	PIN, OUTER
		1514539-103	1013-1113, 1122 UP	
		*1514539-105	1114-1121	
	22.	1514544-101		SPACER, OUTBD
	23.	1514583-101		SHIM, LAMINATED PIVOT BEARING
		1514774-101		SHIM, PIVOT BEARING SPACER
	24.	1514774 101		SHIM
		1514533-101		SHIM
		1514543 101		SPACER (2)
DISASSEMBLY FROM HERE ON SHOULD BE DONE ON THE BENCH				
BEARING AND HOUSING	25.	1514545 101		NUT, BEARING RETAINING
	26.	1517188-103		SHIM, STEEL
	27.	741034-101	1001 1023	BEARING
		741034-103	1024 1138	
		741034-105	1139 1178	
		741034 107	1179-1183	
		741034-109	1184 1121	
		741036 101	1212 UP	
	28.	1514551-101		NUT
	29.	1517189 103		SHIM, COPPER
	30.	1514548-101		HOUSING
ON CONDITION DISASSEMBLY	31	NAS6603HU9		SETSCREW
		AN 960C10L		WASHER
	32.	1524682-101		NUT
	33	1524681 101		WASHER
	34	1524572 105		BUSHING, TAPERED INBD

*11½ THREADS PER INCH ALL OTHERS ARE 12 THREADS PER INCH



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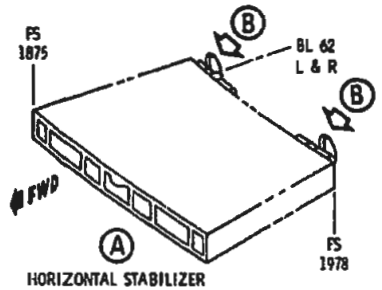
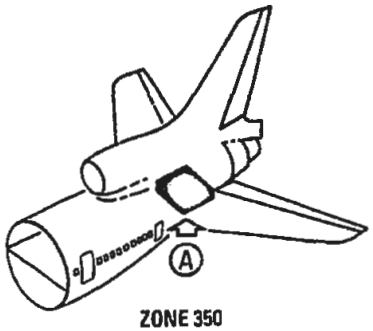
Horizontal Stabilizer Pivot Bearing
Removal and Installation
Figure 402

R EFFECTIVITY: AIRCRAFT WITHOUT SB55-030
R
001B



HORIZONTAL STABILIZER
CENTER SECTION



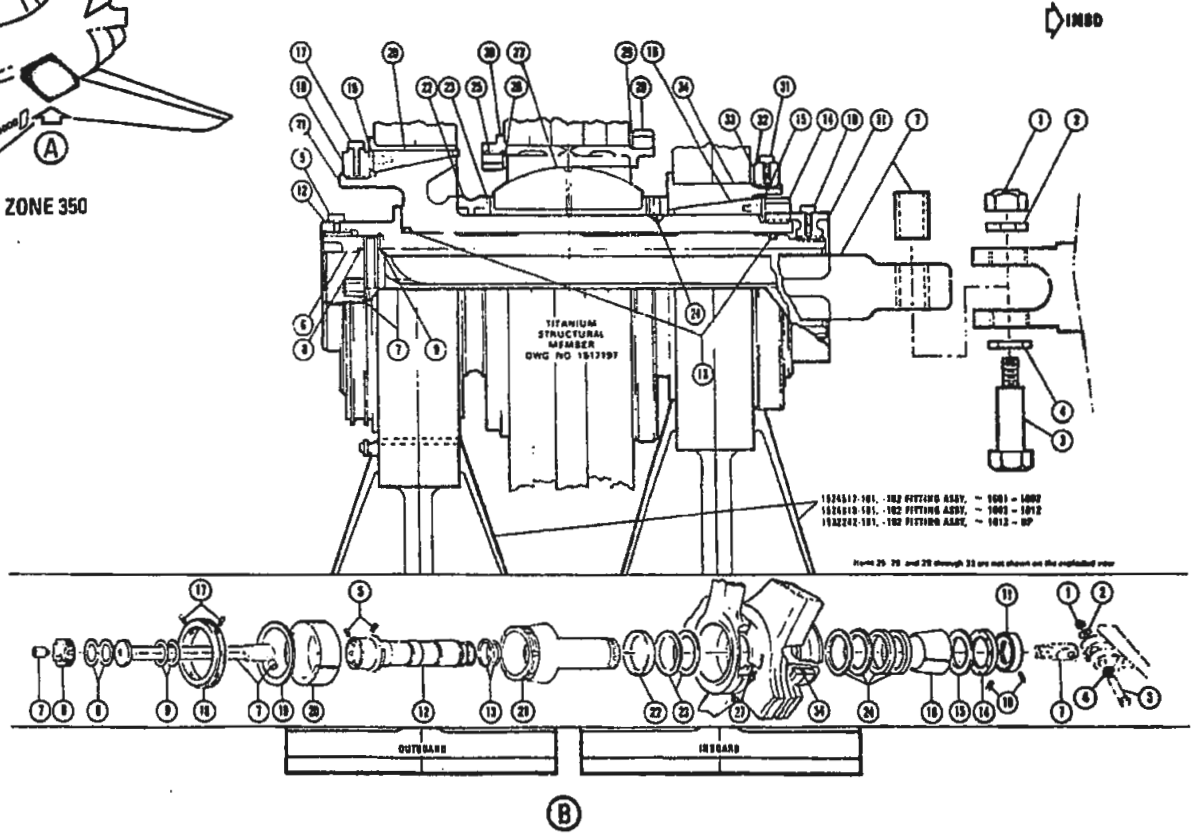
ZONE 350

ORDER OF REMOVAL

HORIZONTAL STABILIZER SIDE LOAD LINK AND PIN ASSEMBLY

	ORDER OF REMVOAL	PART NUMBER		ITEM
SIDE LOAD LINK	1.	MS2104486		NUT
	2.	1817200-101		WASHER
	3.	1517196-101		BOLT
	4.	LS9672C14C		WASHER
	5.	NAS5504HU6		SCREW
	6.	1514535-101		NUT, RETAINER
	7.	1514534-109		BUSHING
		1514534-107		LINK
		1536197-101		ADAPTER, LUBE FITTING
	8.	1514536-101		SHIM
		1514537-101		WASHER, THRUST
	9.	1514537-101		WASHER, THRUST
		1514536-101		SHIM
INNER PIN	10.	NAS5503HU13		SCREW
	11.	1514549-101		NUT, INNER PIN RETAINER
	12.	1514538-101		PIN, INNER
	13.	MS28775-231		PACKING, 'O' RING
		MS28775-229		PACKING, 'O' RING
OUTER PIN	14.	729038-101	1001-1113, 1122 UP	NUT, INBD TAPERED SLEEVE
		*729038-103	1114-1121	
	15.	1514541-101	1001-1023	SHIM, INBD WDGE SPACER
		1514541-103	1024 UP	
	16.	1514542-101		SLEEVE, TAPERED AND SPLIT INBD
	17.	NAS5503HU13		SCREW
	18.	1514547-101	1001-1113, 1122 UP	NUT, OUTBD TAPERED SLEEVE
		*1514547-103	1114-1121	
	19.	1514550-101	1001-1023	SHIM, OUTBD NUT RETAINER
		1514550-103	1024 UP	
	20.	1514548-101		SLEEVE, OUTBD TAPERED
	21.	1514539-101	1001-1012	PIN, OUTER
		1514539-103	1013-1113, 1122 UP	
		*1514539-105	1114-1121	
	22.	1514544-101		SPACER, OUTBD
	23.	1514563-101		SHIM, LAMINATED PIVOT BEARING
		1514774-101		SHIM, PIVOT BEARING SPACER
	24.	1514774-101		SHIM
		1514533-101		SHIM
		1514543-101		SPACER (2)
DISASSEMBLY FROM HERE ON SHOULD BE DONE ON THE BENCH.				
BEARING AND HOUSING	25.	1514545-101		NUT, BEARING RETAINING
	26.	1517198-103		SHIM, STEEL
	27.	741034-101	1001-1023	BEARING
		741034-103	1024-1136	
		741034-105	1137-1175	
		741034-107	1176-1183	
		741034-109	1184-1121	
		741036-101	1212 UP	
	28.	1514551-101		NUT
	29.	1517199-103		SHIM, COPPER
	30.	1514548-101		HOUSING
ON-CONDITION DISASSEMBLY	31.	NAS5503HU8		SETSCREW
		AN 960C10L		WASHER
	32.	1524892-101		NUT
	33.	1524891-101		WASHER
	34.	1524872-105		BUSHING, TAPERED INBD

*11½ THREADS PER INCH. ALL OTHERS ARE 12 THREADS PER INCH



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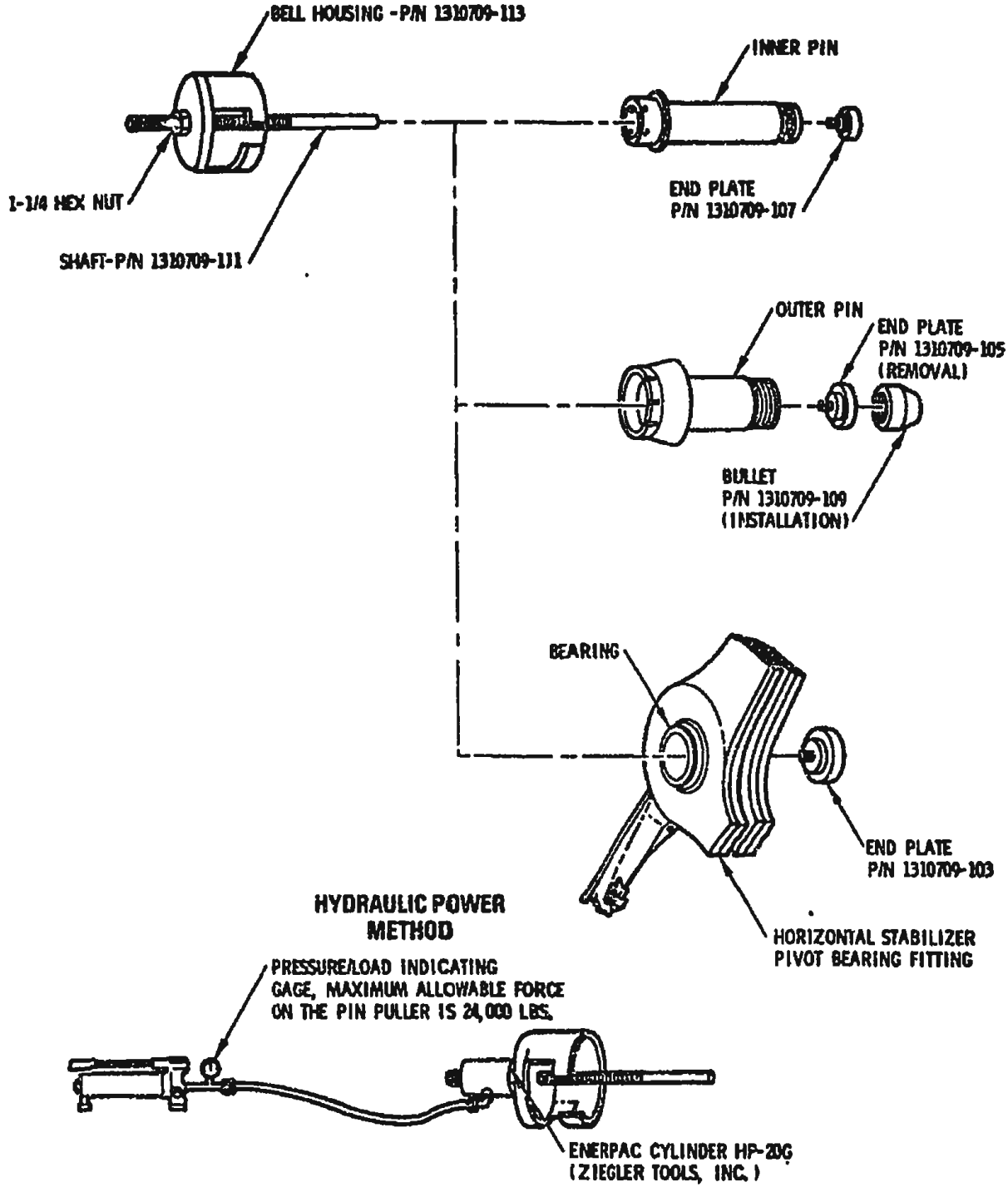
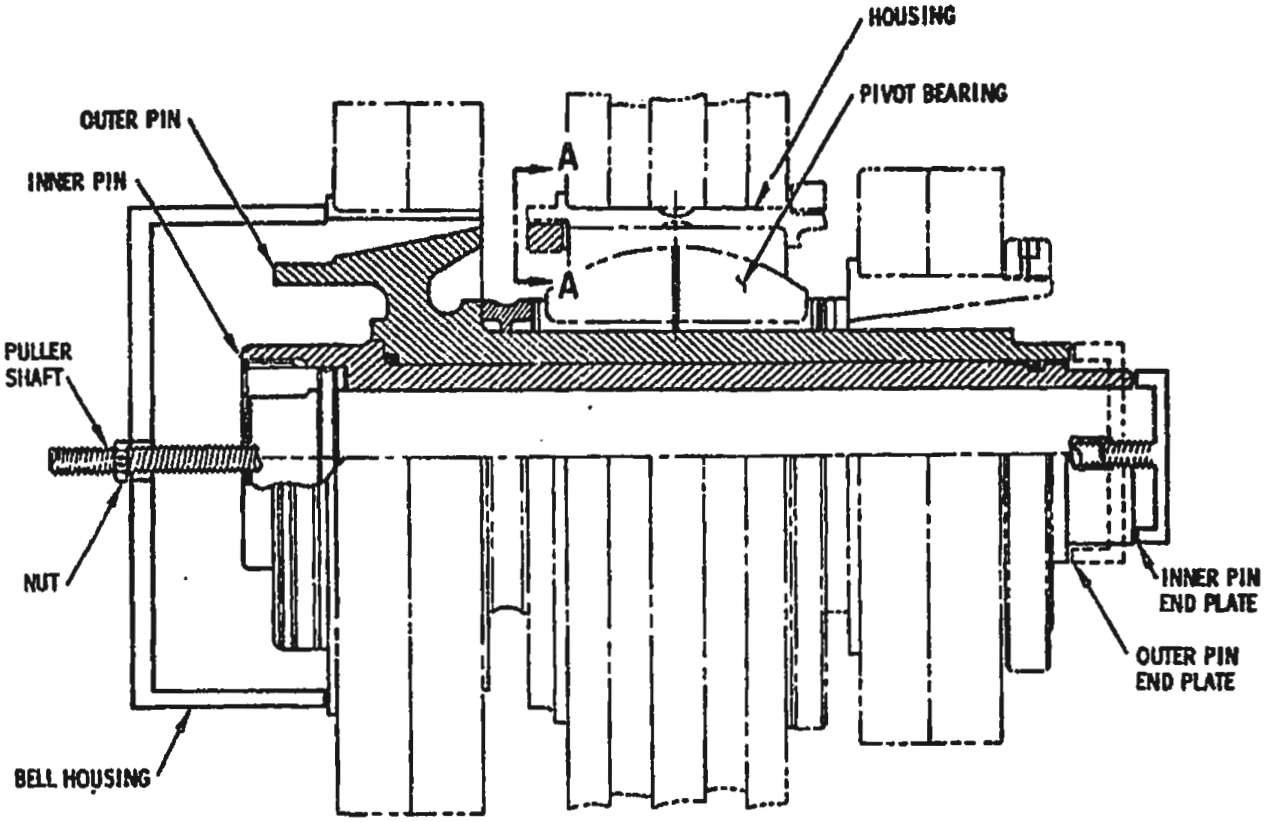
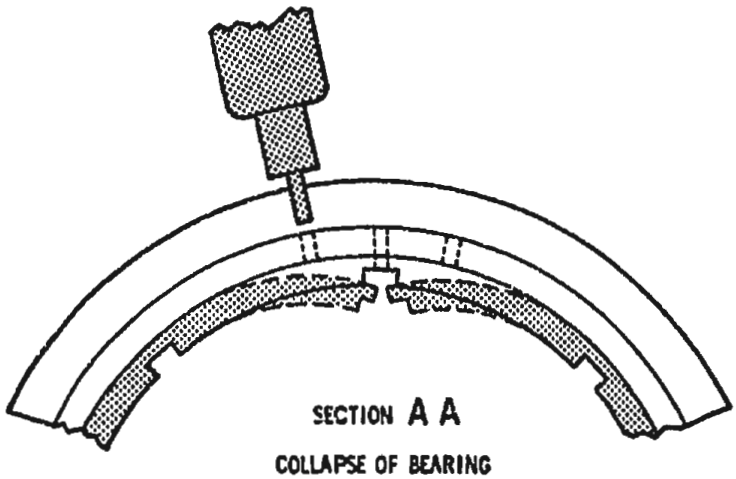
R Horizontal Stabilizer Pivot Bearing
R Removal and Installation
R Figure 402

R EFFECTIVITY: AIRCRAFT WITH SB55-030
R
001B



Horizontal Stabilizer Pivot Bearing Removal Tools
Figure 403





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Horizontal Stabilizer Pivot Pin and Bearing
Retainer Nut Removal
Figure 404

R HORIZONTAL STABILIZER PIVOT BEARING - INSPECTION AND CHECK

CR 1. General - Alternate Procedure

CR This alternate procedure is used to determine the free play in
CR the stabilizer pivot bearing assembly where engine driven
CR hydraulic test stand is available.

R 2. Equipment and Materials

R Dial Indicator Gauge, Federal P/N B71 (.0005 inch) with vertical
R center lug back or equivalent.

R Dial Indicator Support Clamp, P/N 1310709-141 (Part of G/ITEL
R 55-51-12), or equivalent.

R Hydraulic Test Stand, G/ITEL 29-00-02 or equivalent.

R 3. Referenced Procedures

R	6-40-00	Exterior Access Doors and Panels, Zone 300, Afterbody.
R	24-41-00	External Power Ground Service System - Maintenance Practices
R	27-41-03	Pitch Disconnect Mechanism - Adjustment and Test
R	29-11-00	Hydraulic Power System - Maintenance Practices

R 4. Inspection and Check

R A. Horizontal Stabilizer Pivot Bearing Free Play Check (Ref.
R Fig. 601).

R WARNING: VERIFY THE FOLLOWING BEFORE PRESSURIZING ANY
R HYDRAULIC SYSTEM:

R LANDING GEAR DOWNLOCK SAFETY PINS AND DOOR SAFETY
R DEVICES ARE INSTALLED.

R TRAVEL AREAS OF ALL FLIGHT CONTROL SURFACES AND
R MAIN GEAR DOORS ARE CLEAR OF PERSONNEL AND GROUND
R EQUIPMENT.

R THE AFFECTED HYDRAULIC SYSTEMS CAN ACCEPT
R HYDRAULIC PRESSURE.

R WARNING: POSITION PITCH TRIM WHEEL TO 0 DEGREES.

R (1) Remove Horizontal Stabilizer Pivot Bearing access
R panels 318BL and 318BR to gain access to the horizontal
R stabilizer pivot bearing area (Ref. 6-40-00).

R (2) Install dial indicators at the left and right inboard
R fitting of horizontal stabilizer pivot bearings.

R (a) Position dial indicator as close as possible to
R the plumb line of the pivot pin and normal to the
R pivot bearing fitting (Ref. Fig. 601).

R Use the side load link P/N 1514534-107 as a
R reference to find the center line of pivot bearing
R assembly and as an aid to sight the dial indicator
R as close to plumb as possible.

R (b) Preload the dial indicators to 0.100 inch.

R NOTE: The left and right pivot bearing free play can
R be checked individually or simultaneously.

R (3) Turn on electrical power (Ref. 24-41-00).

R (4) Connect hydraulic test stand to "A" and "C" hydraulic
R systems.

R CAUTION: USE ENGINE DRIVEN HYDRAULIC TEST STAND AS THE ONLY
R HYDRAULIC PRESSURE SOURCE. DO NOT USE ON-BOARD
R HYDRAULIC PRESSURE SOURCES. DO NOT EXCEED
R PRESSURE OF 1700 POUNDS PER SQUARE INCH.

R (5) Decouple pilot and copilot control column.

R (a) Turn hydraulic power off.

R (b) Verify electrical power on.

R (c) Position Pitch Trim Wheel to 0 degrees.

R (d) Unlatch A and B switch-lights to stablizer in PFCS
R panel. Verify aft coupler open legend illuminates
R on PFCS panel.

R (e) Open and tag circuit breakers 1B9 and 1B27 on
R pilot's overhead circuit breaker panel to
R deactivate the aft coupler (Ref. 27-41-03).

R (f) Pull pitch disconnect handle to open the forward
R coupler.

(g) Unlatch D switch-light and engage A switch-light to stabilizer on PFCS panel so that A and C pitch servo channels are operative.

(h) Pressurize A and C hydraulic systems to 1600 psi with test stand.

CAUTION: VERIFY THAT B AND D HYDRAULIC SYSTEMS ARE SHUT OFF AND THAT A AND C SYSTEMS ARE AT 1600 PSI USING INDICATORS ON THE FLIGHT ENGINEER'S PANEL.

NOTE: The foregoing steps create a condition in which the pitch servos are controlled independently. The Pilot's control column controls the left pitch servo and its associated hydraulic actuators. The copilot's control column controls the right pitch servo and its associated hydraulic actuators.

(6) Measure left (or both) total pivot bearing deflection as follows.

(a) Push pilot and copilot control columns full forward simultaneously, and hold.

(b) Pull copilot control column aft and hold it against its aft stop, while still holding pilot column full forward.

(c) Zero out the dial gauges.

(d) Push copilot control column to full forward, and hold, while still holding Pilot's column full forward.

(e) Pull pilot control column aft and hold it against its aft stop, while holding copilot control column full forward.

NOTE: Observe whether needle motion is clockwise or counterclockwise.

Record number of revolutions completed (if any) on the revolution counter.

R If needle motion is clockwise, count the
R number of graduation marks between zero and
R needle position, or read value on numeric
R scale.

R If needle motion is counterclockwise, count

R the number of graduation marks between zero
R and needle position, or read value on
R numeric scale and subtract that value from
R the value of one revolution.

(f) Record absolute needle deflection.

C NOTE: Free play equals absolute needle deflection
C minus 0.004 inches.

(g) Return Captains control column to neutral.

(h) Return First Officers control column to neutral.

(7) Measure right Horizontal Stabilizer Pivot Bearing free play by repeating Steps 6(a) through (h).

NOTE: Maximum free play after installation of a new bearing is 0.013 inches (This is after reducing the measured deflection by 0.004 inches).

(8) Turn off hydraulic power (Ref. 29-11-00).

Re-engage forward pitch coupler by turning Pitch Disconnect handle counterclockwise 90 degrees and allowing it to retract slowly.

(9) Close circuit breakers 1B9 and 1B27 on Captain's Overhead Circuit Breaker Panel to re-engage aft disconnect coupler.

(10) Turn off electrical power (Ref. 24-41-00).

(11) Remove dial indicators and support clamps.

(12) Install Pivot Bearing access panels 318BL and 318BR (Ref. 6-40-00, Zone 306, Afterbody).

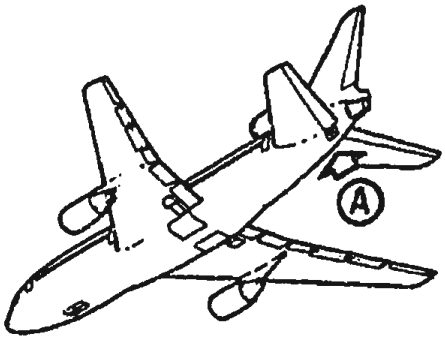
C (13) Freeplay inspection and replacement requirements.

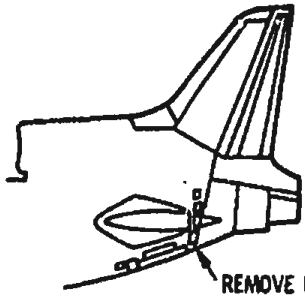
C (a) General Limit.

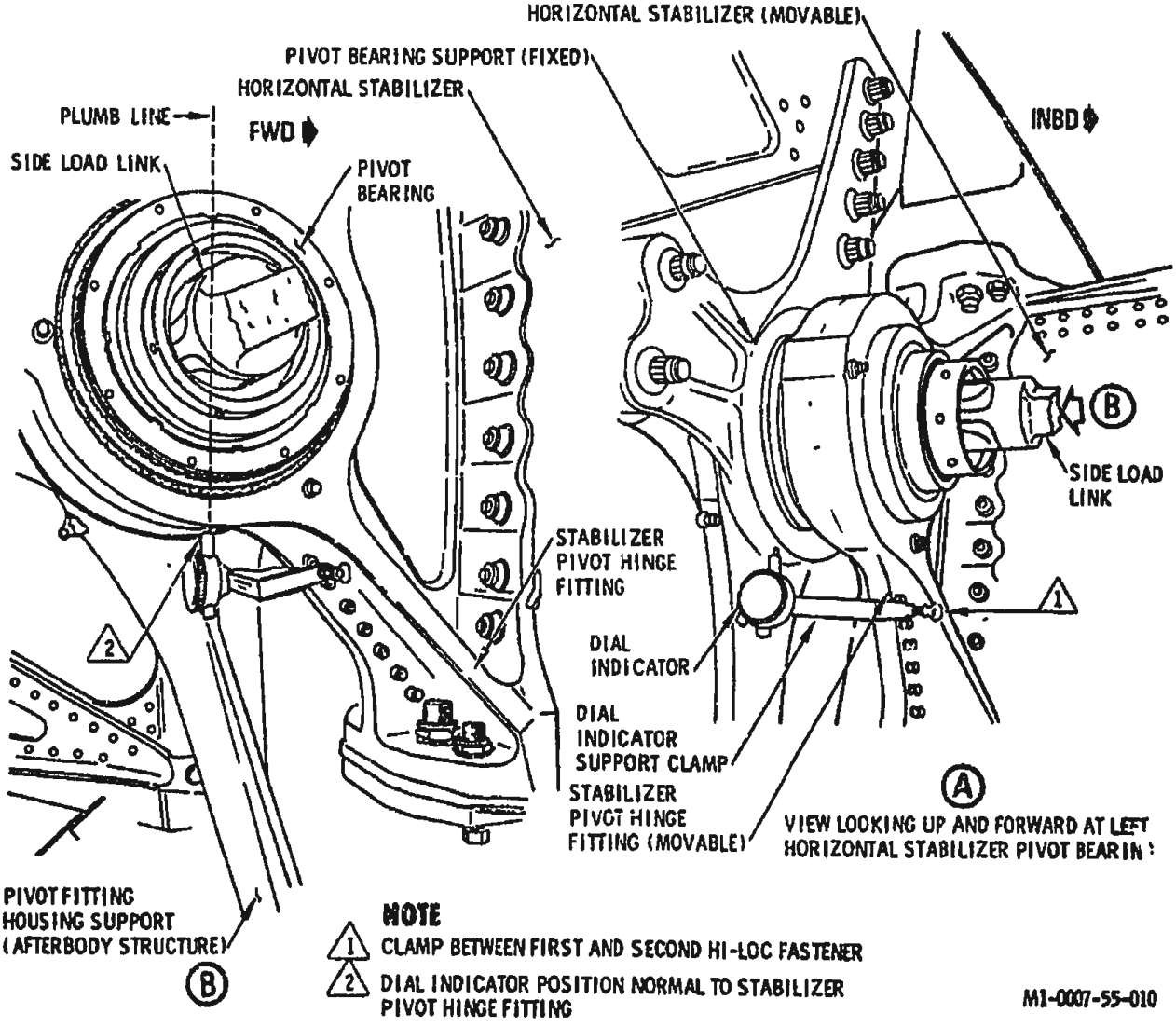
Measured Freeplay Range For Each Bearing Assembly (Inches) Min.	Max.	Reinspection intervals (flight hours), unless the conditions in Note are occurring. Notify MCIMUTW of reinspection limit as noted below:
0	0.010	Schedule M11-55-01 within 20,000 Flt. Hours
over 0.010	0.015	Schedule M11-55-01 within 10,000 Flt. Hours
over 0.015	0.020	Schedule M11-55-01 within 2,500 Flt. Hours
over 0.020	0.025	Schedule M11-55-01 within 1,500 Flt. Hours
over 0.025	0.030	
over 0.030	0.040	Average freeplay of left and right assemblies must not exceed 0.030 inch; if it does, replace the assembly exceeding 0.030 within 1,000 hours. Notify MCIMUTW to schedule M11-55-04 within 1,000 flight hours.
over 0.040	-----	Replace before next Flight. Notify MCIMUTW that M11-55-04 was accomplished and that M11-55-01 must be scheduled within 20,000 flight hours.

NOTE: If rotation is occurring between the bearing outer race and the housing, disassemble and correct the condition within 1,000 flight hours. Notify MCIMUTW that M11-55-04 was accomplished and that M11-55-01 must be scheduled within 20,000 flight hours.

C (b) Base Limit. During MCI base visits when the freeplay exceeds 0.020 inches on either bearing or if previous bearing freeplay measurements have exceeded 0.020 inches since the last bearing replacement, both bearings must be replaced. Notify MCIMUTW that M11-55-04 was accomplished and that M11-55-01 must be scheduled within 20,000 flight hours







R Horizontal Stabilizer Pivot Bearing Free Play Check
R Figure 601

HORIZONTAL STABILIZER PIN ASSEMBLY SHIMS REMOVAL AND INSTALLATION

1. General

This procedure provides information for the removal and installation of two shims which are installed in the horizontal stabilizer side load link and pin assembly. There are two side load link and pin assemblies, located on each side of the aircraft at FS 1978, LBL 62 and RBL 62.

One shim is located at the outboard side of the pin assembly immediately outboard of the outer pin tapered sleeve. The other shim is located at the inboard side of the pin assembly immediately inboard of the inboard tapered sleeve.

2. Equipment and Materials

Grease - MIL-G-23827A, or equivalent

Control column Lock - BA80, or equivalent

R Spanner Wrench (P/N 1310709-135), or equivalent

R Spanner Wrench (P/N 1310739), or equivalent

R Spanner Wrench (P/N 1310740), or equivalent

R Spanner Wrench (P/N 1310709-137), or equivalent

3. Referenced Procedures

6-40-00	Exterior Access Doors and Panels, Zone 300, Afterbody
12-23-15	Horizontal Stabilizer Pivot Bearing Support Lubrication

4. Removal/Installation

NOTE: Retain all screws, bolts, nuts and washers from removed assemblies for reuse at time of reinstallation.

A. Removal

WARNING: ENSURE THAT ALL FOUR HYDRAULIC SYSTEMS ARE OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

NOTE: Tag and identify removed parts as required to assure correct location and sequence when reinstalled.

(1) Install control column lock, BA80, or equivalent.

(2) Gain access to side load and pin assembly area by removing the following assemblies (Ref. 6-40-00, Zone 300).

(a) Horizontal stabilizer inboard fairing panel, 334AB or 344AB and upper and lower seal supports on inboard closure rib.

(b) Pivot bearing access panel, 318BL or 318BR.

(c) Pivot bearing access panel and fairing closure assembly, 318EL or 318ER.

(3) Disconnect pivot assembly lubrication hose from lube fitting.

(4) Remove lube fitting and lube fitting adapter from sideload fitting (Ref. Fig. 401).

(5) Loosen or remove two setscrews which secure retainer nut (P/N 1514535) to outer pin assembly.

R (6) Using spanner wrench (P/N 1310709-135), remove retainer nut.

(7) Remove shim (P/N 1514536) and thrust washer (P/N 1514537) located between retainer nut and outboard end of side load fitting.

(8) Remove nut, pin and washers which attach sideload fitting to fitting on structure.

(9) Remove side load fitting, including spacer (P/N 1514537) and shim (P/N 1514536).

(10) Loosen or remove two setscrews which secure outboard tapered sleeve retainer nut (P/N 1514547) to outer pin assembly.

R (11) Using Spanner Wrench (P/N 1310740), remove retainer nut.

(12) Remove shim (P/N 1514550).

(13) Loosen or remove two setscrews which secure retainer nut (P/N 1514549) to inner pin assembly.

R (14) Using Spanner Wrench (P/N 1310709-137), remove retainer nut.

R (15) Using Spanner Wrench (P/N 1310739), remove retainer nut (P/N 729038) which secures inboard tapered sleeve to outer pin assembly.

(16) Remove shim (P/N 1514541).

B. Installation

NOTE: Apply coating of grease to each side of all shims, spacers and threaded area of retainer nuts prior to reinstallation.

(1) Clean all removed parts, inspect and replace as required.

(2) Install shim (P/N 1514541) to inboard face of inboard tapered sleeve (Ref. Fig. 401).

R (3) Install retainer nut (P/N 729038) and using spanner
R wrench (P/N 1310739), torque 800 to 900 lb in.

R (4) Install retainer nut (P/N 1514549) on inner pin, using
R spanner wrench (P/N 1310709-137). Torque 800 to 900 lb in. Reduce torque as required to align setscrews with keyway.

(5) Install and tighten two setscrews, 180 degrees apart.

(6) Stack spacer (P/N 1514537) and shim (P/N 1514536) on side load fitting and push through inner pin assembly from outboard side.

(7) Position end of side load fitting in fitting mounted on structure.

(8) Coat shank of pin and threads with grease, install washer (P/N LS9672C14C) next to head of pin and install pin.

NOTE: If the pin cannot be inserted, remove sideload fitting and remove laminations from shim (P/N 1514536) as required.

(9) Install washer (P/N 1517200) and nut.

(10) Torque nut 70 to 80 lb. in.

(11) Install shim (P/N 1514550) and outboard tapered sleeve retainer nut (P/N 1514547) and torque 800 to 900 lb in. Reduce torque as required to align setscrews with keyway. Install and tighten two setscrews, 180 degrees apart.

(12) Install spacer (P/N 1514537) and shim (P/N 1514536) at outboard end of side load fitting.

(13) R Install retainer nut (P/N 1514535) using spanner wrench (P/N 1310709-135). Torque 20 to 30 lb in. Remove laminations from laminated shim to obtain setscrew alignment with keyway and maintain required torque.

(14) Install and tighten two setscrews, 180 degrees apart.

(15) Install lube adapter and lube fitting in outboard end of sideload fitting.

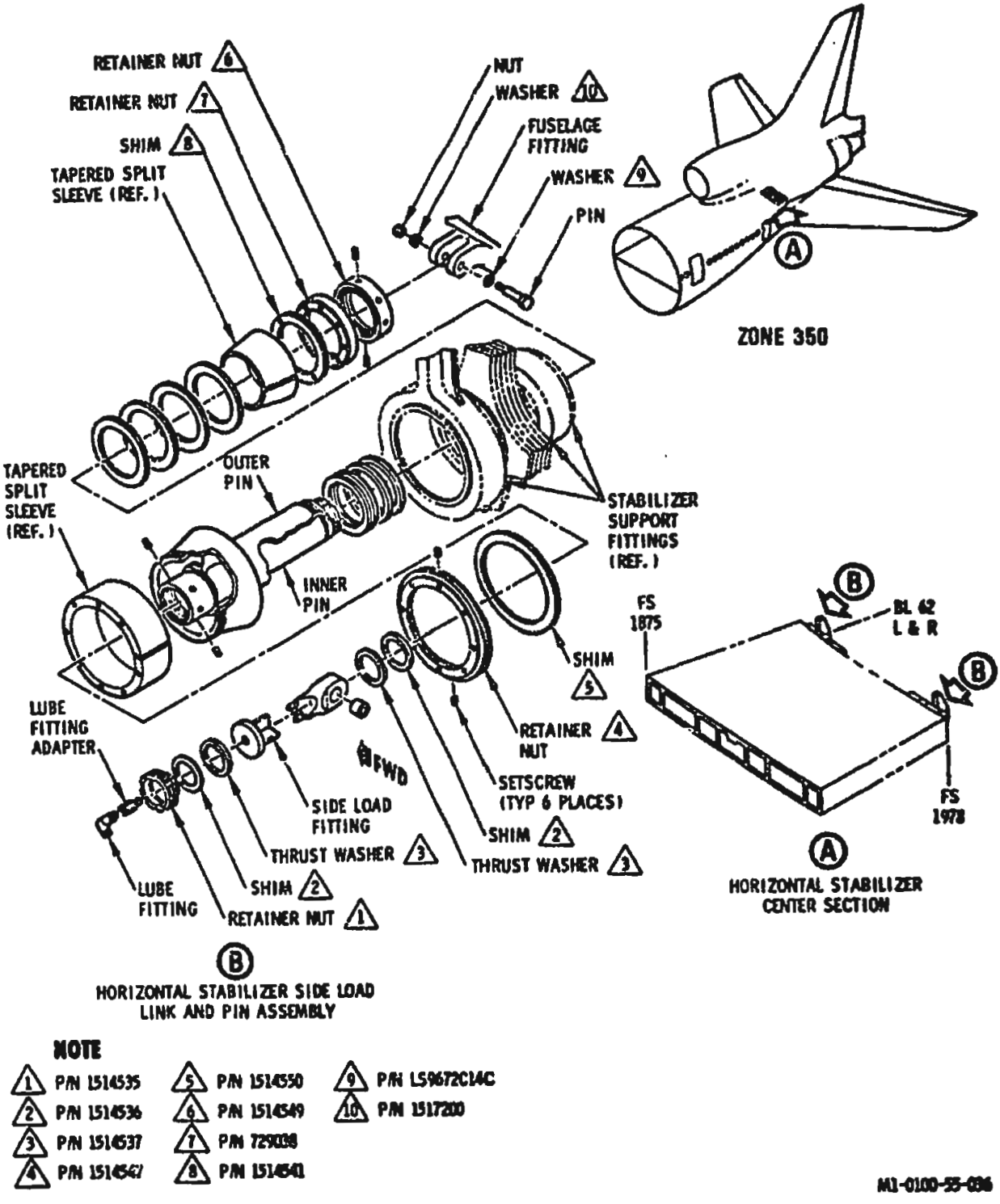
(16) Reconnect lubrication hose to lube fitting.

(17) Lubricate pivot bearing and side load fitting pin (Ref. 12-23-15, Figure 303).

(18) Reinstall assemblies removed in Paragraph 4A(1)(a) through 4A(1)(c).

(19) Remove control column lock installed in Paragraph 4A(1).

(20) Remove tags from Flight Engineer/Second Officers panel, Zone 215 and Hydraulic Service Panel, Zone 147.



NOTE

1. P/N 1514535
2. P/N 1514536
3. P/N 1514537
4. P/N 1514542
5. P/N 1514550
6. P/N 1514549
7. P/N 729038
8. P/N 1514541
9. P/N LS9672C14C
10. P/N 1517200

M1-0100-55-036

R Horizontal Stabilizer Pin Assembly Shims - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
001B

HORIZONTAL STABILIZER PIVOT BEARING FITTING REMOVAL AND INSTALLATION

1. General

This procedure provides information for removal and installation of the horizontal stabilizer pivot bearing fitting.

2. Equipment and Materials

Sealing Compound, LCM 40-2121B12, or equivalent

Anti-Seize Graphite Compound, MIL-T-5544B, Shell Oil Co., or equivalent

Brass shim stock, 0.004 inch, or equivalent

Horizontal Stabilizer Pivot Bearing Fitting Tool Kit, G/ITEL 55-51-13, or equivalent

3. Referenced Procedures

	6-40-00	Exterior Access Doors and Panels Zone 300 Afterbody - Removal and Installation
	6-50-00	Interior Panels, Zone 330, 340 Horizontal Stabilizer - Removal and Installation
	20-24-04	Electric Bonding and Grounding Connections - Maintenance Practices
	20-51-04	Environmental Sealing of Model L-1011 Airplane
	20-55-01	Lockheed Overhaul Manual - Horizontal Stabilizer Pivot Bearing Housing
	29-11-00	Hydraulic Power System - Description and Operation
	36-12-02	APU Bleed Air Shutoff Valve - Removal and Installation
R	55-51-51	Pivot Bearing - Removal and Installation
R	55-51-51	Horizontal Stabilizer Pivot Bearing - Inspection and Check

4. Removal and Installation

A. Removal

NOTE: Retain all screws, bolts, nuts shims and washers from removed assemblies for reuse at time of installation. Tag and identify removed parts as required to assure correct location and sequence when installed.

WARNING: VERIFY THAT ALL FOUR HYDRAULIC SYSTEMS ARE SHUT OFF (REF. 29-11-00). TAG FLIGHT ENGINEER/SECOND OFFICERS HYDRAULIC SYSTEM PANEL, ZONE 215, AND THE HYDRAULIC SERVICE PANEL, ZONE 147.

(1) Install control column and trim wheel lock.

(2) Gain access to the stabilizer bearing area by removing the following access panels (Ref. 6-40-00).

(a) Horizontal stabilizer lower aft airgate fairing, 337DB.

(b) Horizontal stabilizer upper and lower fairing panels, 334AB and 334AT or 344AB and 344AT.

(c) Horizontal stabilizer pivot bearing access panel, 318BL or 318BR.

(d) Horizontal stabilizer pivot bearing access panel and fairing closure assembly 318EL or 318ER.

(e) Horizontal stabilizer and rib closure panel 334AZ or 344AZ.

NOTE: On left-hand side, the APU load compressor discharge duct, access panel 317DL, can be removed to obtain additional clearance for removing bolts on lower member of pivot bearing fitting (Ref. 36-12-02).

R (3) Remove horizontal stabilizer pivot bearing (Ref. 55-51-51).

(4) Remove bonding straps (Ref. Fig. 401).

(5) Remove cover fairing.

(6) Remove bolts securing the pivot bearing fitting to the horizontal stabilizer. Use caution to prevent damage to the two 0.004 inch copper shims between structural member and bracket.

R (7) Remove pivot bearing fitting using horizontal stabilizer pivot bearing fitting tool kit to hold fitting together and prevent rotation and shim damage (Ref. Fig. 402).

NOTE: If horizontal stabilizer pivot bearing housing is to be replaced, reference Lockheed Overhaul Manual 20-55-01.

B. Installation

NOTE: If original copper shims were damaged on removal, fabricate new ones using brass shim stock, 0.004 inch, or equivalent.

R (1) Remove horizontal stabilizer pivot bearing fitting tool kit, taking care not to rototate fitting causing shim damage (Ref. Fig. 402).

R (2) Position pivot bearing fitting, with 0.004 inch copper shims, on horizontal stabilizer (Ref. Fig. 401).

R (3) Lubricate threads of all securing bolts using anti-seize compound.

R (4) Wet install bolts, washers and nuts on upper arm of pivot bearing fitting using sealing compound. Torque bolts 2400 to 2600 lb. in.

NOTE: Two washers may be used to insure proper thread engagement.

R (5) Install bolts, washers and nuts on side arms of pivot bearing fitting. Torque nuts 1200 to 1400 lb. in.

NOTE: Two washers may be used to insure proper thread engagement.

R (6) Install bolts, nuts, washers and shims on lower arm of pivot bearing. Torque nuts 115 to 125 lb. in.

NOTE: Maximum gap permitted on lower joint is 0.002 inches. Fill gap with laminated cres shim before installing fasteners. Maximum thickness is 0.6 inches.

Bolt rotation is permitted if a subsequent torque is applied to bolt head or nut and providing bolt head or nut are not reacted at other end.

(7) Using sealing compound, LCM 40-2121 or equivalent, apply a faying surface seal to all faying surfaces (Ref. 20-51-04).

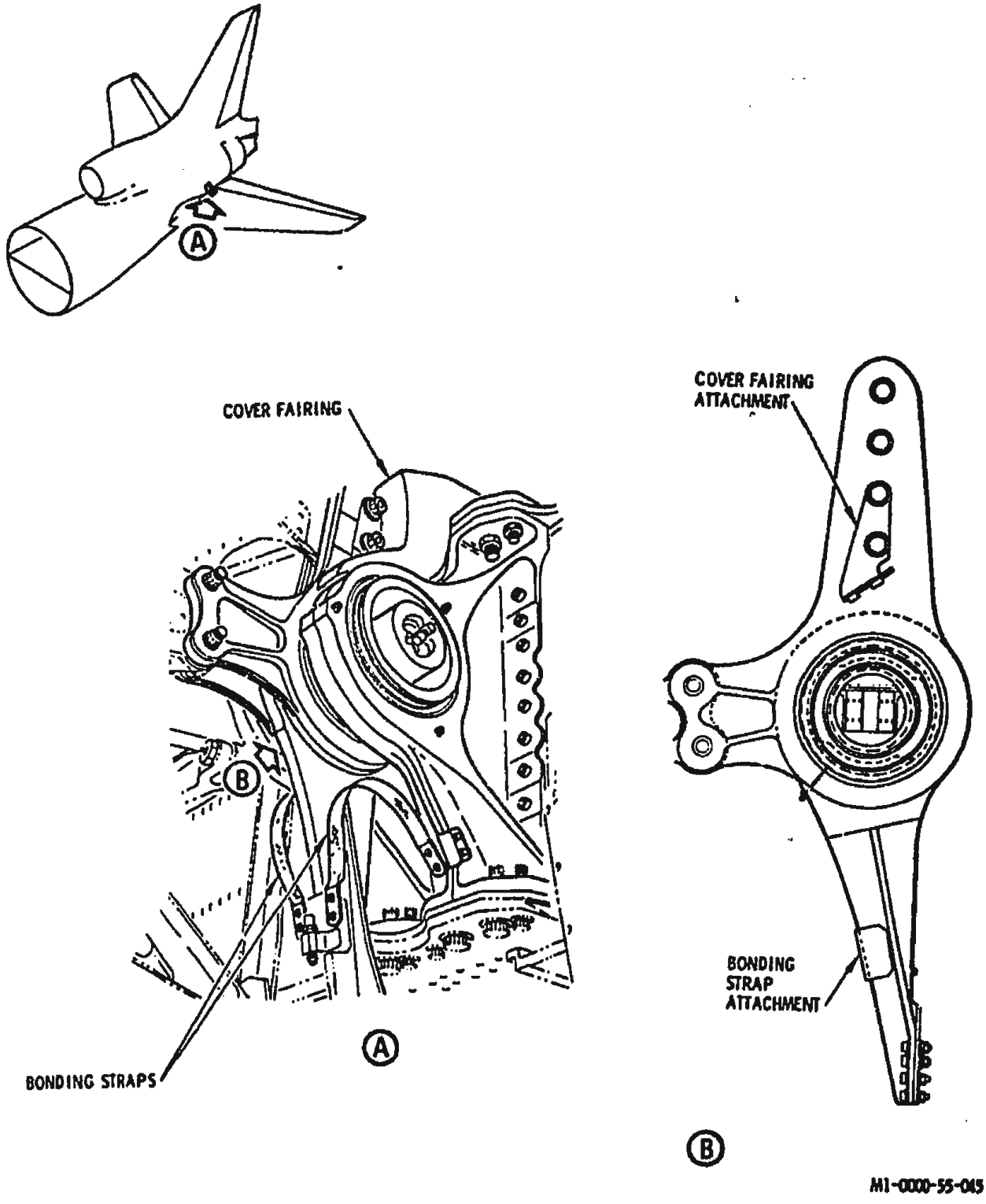
(8) Install cover fairing on horizontal stabilizer bracket.

(9) Install bonding straps on horizontal stabilizer bracket and pivot bearing fitting (Ref. 20-24-04).

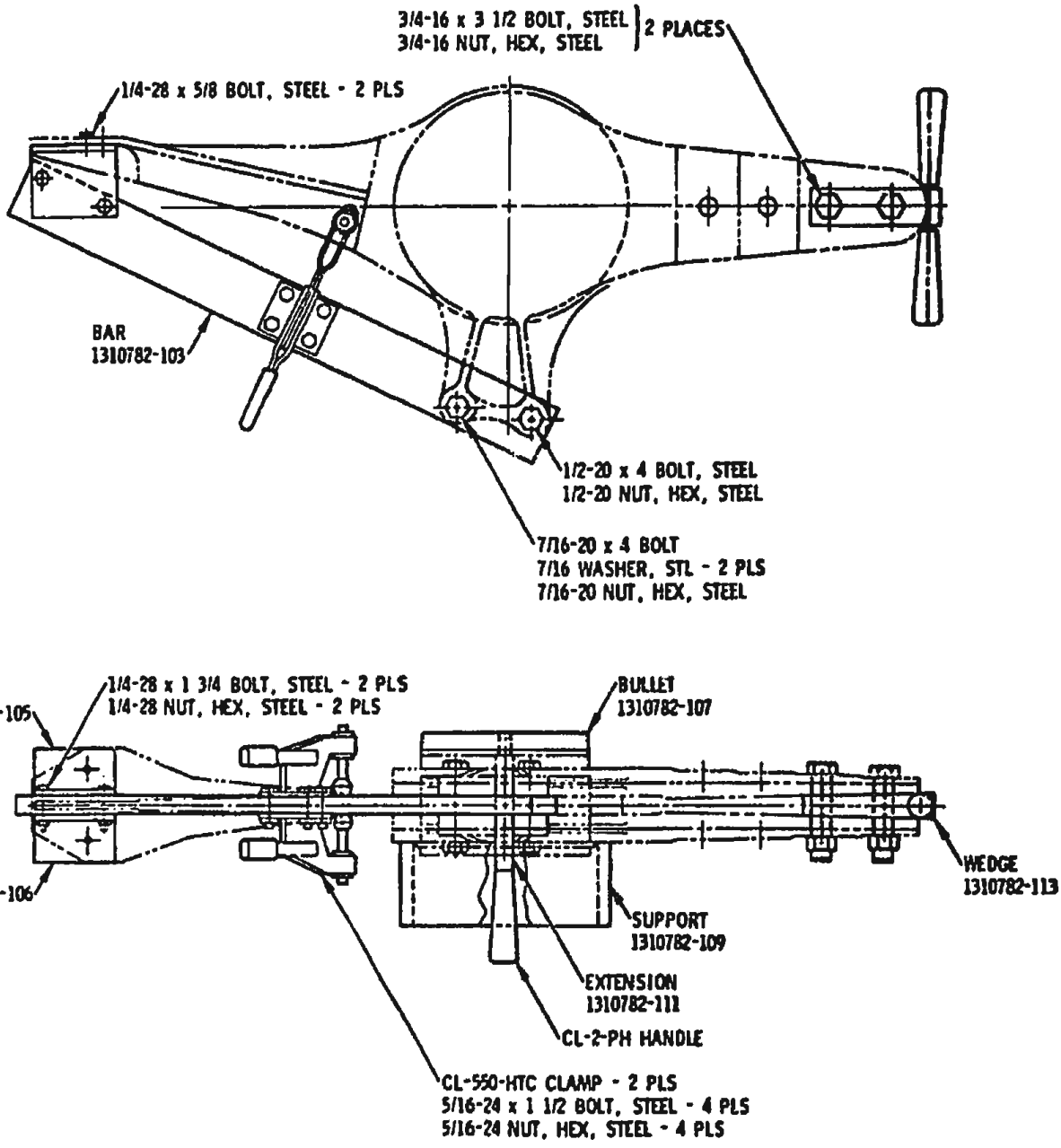
(10) Install Horizontal Stabilizer Pivot Bearing (Ref. 55-55-51).

(11) Install access panels removed in Step 4A(2) (Ref. 6-40-00).

R (12) Remove control column and trim wheel lock, and remove
R tag on Flight Engineer/Second Officers Hydraulic System
R Panel, Zone 215, and Hydraulic Service Panel, Zone 147.



Horizontal Stabilizer Pivot Bearing Fitting
Figure 401



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R Horizontal Stabilizer Pivot Bearing Fitting Tool Kit, G/ITEL
R 55-51-13, Installation
R Figure 402

R EFFECTIVITY: ALL

001B

CR HORIZONTAL STABILIZER PIVOT BEARING FITTING - INSPECTION CHECK

CR 1. General

CR This section gives retention limits for the copper shims
CR installed between the pivot bearing support fittings.

CR 2. Equipment and Materials - NONE

CR 3. Referenced Procedures - NONE

CR 4. Inspection and Check

CR A. Sixty percent of the copper shims are to be retained for
CR continued service.

CR B. If the structure is disassembled for any reason, all
CR protruding shims are to be replaced.

R

PIVOT BEARING - MAINTENANCE PRACTICES

R 1. General

R THIS PROCEDURE HAS BEEN RELOCATED TO CHAPTER 55-51-51, PAGE
R BLOCK 201.

R HORIZONTAL STABILIZER PIVOT BEARING
R REMOVAL AND INSTALLATION

R 1. General

R THIS PROCEDURE HAS BEEN RELOCATED TO CHAPTER 55-51-51, PAGE
R BLOCK 401.

R HORIZONTAL STABILIZER PIVOT BEARING - INSPECTION AND CHECK

R 1. GENERAL

R THIS PROCEDURE HAS BEEN RELOCATED TO CHAPTER 55-51-51, PAGE
R BLOCK 601.